

# The Boston Medical and Surgical Journal

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April 27, 1916

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## Therapeutic and Preventive Medicine.

### CHRONIC BACKACHE.

By HERMAN W. MARSHALL, M.D., BOSTON.

MEN, women and children in all classes of society suffer from chronic backache, and this subject possesses wide interest because of its frequency, its many underlying causes, and from the fact that crippling disability at times results from it. Further discussions and critical studies of data at hand are needed still to settle satisfactorily conflicting views, and there should be no expectation that many confusing, and often apparently contradictory, clinical observations will spontaneously harmonize themselves without prolonged puzzling over their exact significance. The writer accordingly presents his ideas by means of a few typical cases selected to review different types of back troubles, and these will serve to introduce discussions of treatments and other matters of practical importance.

1. *Static Back Strain.* The first case is that of a woman of thirty-six years. The appearance of the back is shown in figs. 1 and 2, exhibiting a slight scoliosis and very pronounced antero-posterior lumbar curve of the spine. The symptoms of which she complained were weakness and dull ache in the lower part of the back, a similar dull ache and feeling of heaviness between the shoulders, and painful symptoms in calves of both legs. There was a personal history of lumbar symptoms intermittently for many years, with no traumata or associated in-

fections. She said pains extended at times to gluteal regions and thighs. Constipation had been a prominent peculiarity during years past, sometimes a week intervening between movements of the bowels. Menstruation was usually regular, there had been no pelvic trouble, no children or miscarriages. Her life had been a varied one with no important occupational elements entering into underlying causes.

Examination of the back showed slight scoliosis, as shown in the photograph, and this peculiarity had not changed appreciably for years. Back motions were free in all directions and of average range, although toward their limits the slight strains complained of were somewhat increased. There was no spasm of muscles of the back and no areas of tenderness on pressure over sciatic nerves, sacro-iliac joints, or other regions.

Social considerations demanded relief at a minimum amount of expense. A spinal-abdominal support, figured in 4, was made immediately and considerably relieved lumbar symptoms as soon as it was put on. Figure 3 shows the patient with corsets, which she had worn previously, readjusted over the orthopedic support to the somewhat changed figure. Appropriate tonic-eliminative drugs and foot strapings also were prescribed immediately. These combined to give so much relief to all parts, and so soon, that the patient did not care to spend extra money for x-rays of spine or gastro-enteric tract, or for any further clinical examinations.

What diagnosis should be made in this case? Excessive hollowness of the lumbar spine with some lateral curvature is perfectly obvious, and



Figs. 1 2 3 4

orthopedists might place the case in the group of static or postural back strains. If x-rays had been taken which revealed unusual peculiarities of the lumbo-sacral spine, as often happens, they also might speak of the condition as due to bony spinal variations and consider that the latter primarily increased antero-posterior and lateral curvatures. An enthusiastic medical internist might emphasize the etiological importance of the pendulous abdomen, attributing relief afforded primarily to improved functions of abdominal digestive organs, with indirect secondary improvement in all parts, including the back. Or an internist with strong appreciation of pharmacology might insist that drugs prescribed acted as turning points in restoration of health, affecting in well-recognized ways digestive organs, kidneys and nervous system; that by stimulating these organs into greater healthy activity the drugs permitted orthopedic appliances then to act successfully enough to restore healthy balance. A serologist might direct attention mainly to the condition of the blood and its effect upon tone of back muscles and ligaments, relegating other features to the background as being of secondary importance. Or, if specific reactions of the blood were obtained, the trouble might be classified then as a specific one, postural elements sinking into obscurity although they still continued to exist unchanged. Social workers presumably would delve into personal habits, home, and work of the individual in an endeavor to disclose peculiarities striking enough to classify the case as an occupational trouble.

All these various view-points undoubtedly should be taken into consideration in the one problem, relating as they do to its different aspects; and they demonstrate in an interesting manner how far special knowledge has ramified. No explanations should be needed why enthusiastic acceptance of any single view alone to exclusion of all others is unjustifiable and productive of many unnecessary delays and failures in treatment.

Objections may be raised to management of this case on the ground that treatment was instituted on a "snap diagnosis." In defense it

may be said that all clinical tests cannot be made simultaneously, nor is it necessary to inflict upon all patients complete expensive scientific verifications of natures of their diseases when they are quickly relieved. In this instance the hollow back, prominent abdomen, absence of limitation of back motions, and lack of tenderness to pressure in the back, together with distribution of painful symptoms in three widely different localities suggested immediately an obscure, slightly debilitated state, with relaxed muscles and strained ligaments of these different parts. The most promising remedies were tried first, but other procedures were arranged to follow if necessary; and simply in this instance the first attempt happened to be successful.

II. *Low Back Strain Associated with Injury.* A man of sixty years was lifting down a heavy barrel of fish from an elevated position and felt something snap low down in his back. He had had no serious trouble previously but immediately following this accident severe back pain was noticed, and for twenty months the symptoms have persisted in variable degree. Figures 5, 6, 7, 8 show the patient's appearance. Examination revealed limitations of back motions, localized tenderness over both sacro-iliac regions which was much worse on the left side, with decided spasm and soreness in the lumbar muscles. The hips apparently were not involved. Figures 7 and 8 show the patient's attempts at forward and backward bending twenty months after his injury. X-rays demonstrated no marked variations in lumbar vertebrae or sacrum. No displacements of bones or relaxations of ligaments could be made out on examination.

The patient gave a definite history of chronic constipation, but had had no genito-urinary trouble nor recent infections. Interpretation, when the patient was first seen fourteen months after the injury, was that the condition represented a low back strain probably accompanied by an imperceptible slipping of the left sacro-iliac joint. It seems probable that primarily there had been a mild debilitated condition of gastro-enteric origin from chronic constipation, and that this resulted in a slight lowering of tone of back muscles and lessening of resistance



FIG. 5

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7

8

of ligaments. Presumably in moving the heavy weight an unusual strain happened to be thrown upon the slightly relaxed muscles and weakened ligaments of the left sacro-iliac joint so that it gave way very slightly. The opposite sacro-iliac joint and neighboring lumbar muscles became unusually strained, too, on account of underlying vascular conditions, and also because of extra work put upon them to favor the joint first affected.

The patient succeeded in working after his injury for several months with difficulty, then was laid off for a few weeks, but continued to have trouble when he returned again. When first seen by the writer a spinal-abdominal support, similar to the one figured in 4, was prescribed immediately. This very gradually relieved the pain, and when the patient was seen again, six months after, it was being worn too loosely to afford much support. This fact probably accounts for the slow progress made at this time, as back strappings tightly applied promptly relieved the chronic symptoms. The abdominal belt, however, had helped restore functional activities in abdominal viscera, similarly as in the first case, and the patient commented on the great comfort of the support as soon as it was put on. Discussion of slipping of the bones will be undertaken later.

III. The third patient is a little girl of thirteen years, who came for treatment of back deformity more than on account of painful symptoms. She noticed her shoulders were getting round, one becoming higher than the other, and that her posture was growing bad. Figures 9 and 10 indicate her appearance, and she will be readily recognized by everyone as a very common type, a rapidly growing, slightly anaemic, adolescent patient, with relaxed muscles and delicate health. Tonic drugs, regulations of digestive functions and personal hygiene, combinations of rest, local support and gymnastic exercises for back muscles are ob-

viously indicated for this girl for a considerable period until she has attained her growth.

It is easy to see how the scapulae of this patient may become harmfully bent and be permanently flexed when they are completely hardened. She naturally introduces the fourth case, a woman with flexed scapulae and strain of sacro-iliac joints.



FIG. 9

10

IV. A woman of twenty-eight years, a governess, sought relief for dull aching pains referred to the entire back but which did not extend into the legs. She had suffered with these symptoms for about five years and they had come on gradually. She was a relaxed person of neurotic temperament. She had had an abdominal operation performed several years previously, an appendectomy and ovariectomy, and was still troubled with constipation. She had tonsillitis regularly every winter. A plaster jacket relieved symptoms low in the back, but pains in region of the shoulders and neck persisted. The scapulae were operated on and found moderately incurved. She still considered the scapula

operation a benefit eight years afterwards, because it had relieved the aching neck and shoulders, although there was some restriction then in extreme limits of arm raising. An x-ray taken eight years after the first supportive treatments were begun, is shown in Fig. 37 and indicates the absence of appreciable anatomic peculiarities of the lumbo-sacral spine. Details of symptoms low in the back are as follows: Pains were considerably relieved, promptly, by a plaster jacket which was put on with the patient recumbent on a Goldthwait frame. Lumbar pains slowly subsided still more during the period after operation when a spring steel back brace with pelvic band was worn for a year afterwards. Then for four years the patient remained comfortable, increased in weight and strength and was married. A recurrence of sacro-iliac strain occurred five years after the plaster jacket had relieved her symptoms, but new corsets with pelvic band of webbing were fitted, and these supported her fairly well for the next two years. Eight years after the jacket was first applied, lumbar pains again returned, this time extending into both thighs. A short spring steel back support was adjusted under the corsets and it relieved the symptoms a little, but she still possesses a weak back and probably will continue to strain it easily as long as she possesses an unstable neurotic temperament with frequent slight digestive and pelvic irregularities. She notices now that after bending forward to lace her shoes, several hours of dull aching sensations in the back follow, and she also always selects chairs to sit in which have straight backs, for these do not strain so much the ligaments of the lumbo-sacral region.

V. *Postural Shoulder Strain.* A Greek fruit dealer, aged twenty-eight years, complained of dull pains in back, shoulders and arms. Duration of symptoms two years. Occasionally he had pains also in the left hip. The most striking feature in this case is the rounded posterior curve of the dorsal spine, which suggests an old healed tubercular lesion of the spine, but x-rays show no evidence of tuberculosis. The patient

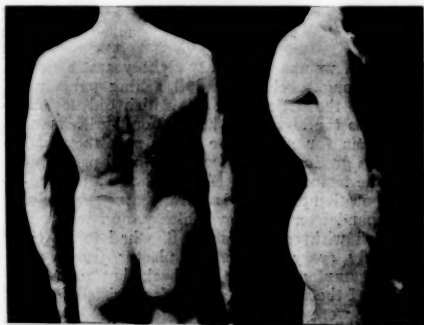
is a small man of sallow appearance. He received no injury, did no heavy lifting, and his shoulder symptoms were variable from time to time. There was no sensitiveness at angles of scapulae, and a routine examination by a medical internist revealed no other abnormalities, so the diagnosis of the shoulder strain has been made, a condition similar to foot strain or low back strains, brought on by vascular defects that, in turn, have been due to poor personal hygiene and to general lack of healthy vitality for a long time.

Medicinal tonics and eliminants together with shoulder strappings were sufficient to relieve his symptoms, but the spinal deformity should be considered an additional factor which helps to strain back muscles and those of the shoulders more than usual; yet entire responsibility for the symptoms should not be attached to this attitude. Figures 11 and 12 show the back and lateral views of the patient in a standing posture.

VI. *Sacro-iliac Strain with Permanent Lateral and Forward List of the Body.* A man of thirty-four, a house painter by occupation, began to have pain in his right leg eight months before photographs shown in Figs. 13, 14, 15, 16 were taken. There was no injury associated with the onset of his trouble. He gradually grew worse, and four months after its beginning there was definite slight lateral curvature of the spine. He stood with the lumbar spine held rigid and with its antero-posterior curve flattened. He was unable to stand erect. There was decided tenderness about the right sacro-iliac joint, and muscles of the right thigh were spastic. Straight leg raising was limited to 30° on the right side, and to 80° on the left side.

Tight strappings over the sacro-iliac region greatly lessened the pain in the legs, and a belt was made for the patient which is figured in 16. This treatment enabled him to work, and he has continued to do so in spite of the listed condition shown in the pictures. At the end of eight months pains were increasing in the right buttock and right calf, but there were no localized points of tenderness over the sacro-iliac region nor over the sciatic nerve. He stood and worked in the slightly stooping posture shown. Hyperextension of the thigh was very painful. His appetite was good, the bowels moved regularly, and he was then gaining a little in weight. His belt had been worn too loosely to afford much support, and strappings, shown in Fig. 15, which reinforced gluteal muscles, immediately made the hip feel better. Tonic-eliminative drugs were prescribed also at this time and these combined measures greatly relieved him.

VII. *Fractures of Vertebrae.* A man of forty-nine years, a cement mason, fell from a considerable height one year before he came to the Massachusetts General Hospital for examination. He had been treated with plaster jackets in another institution, but no fracture of the spine had been determined. Additional x-rays



FIGS.

11

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FIGS.

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16

taken at the Massachusetts General Hospital revealed no bony lesion, and he was treated for a while as a case of osteo-arthritis, being supported first with a webbing belt and later with a leather jacket. The pains persisted and a lateral x-ray of the spine was taken, finally, which showed its antero-posterior outlines with a slight crush of the body of the first lumbar vertebra.

At this time, fifteen months after the injury, the patient was walking about with his leather jacket on, but he complained of severe burning pain in his back near the level of the injury, but it did not extend around on to the abdomen. There was definite sensitiveness on pressure over the spine of the affected vertebra, and it was thought some of the posterior spinal ligaments probably also had been torn. A slight depression in the furrow of skin in the midline of the back could be made out coinciding with the area of sensitiveness. See Fig. 18. When the back support was removed, while the patient was standing there was marked spasm of the erector spinae muscles, and back movements were greatly limited in all directions. Knee jerks were active. The patient stated that he found his leather brace of great assistance in walking and

he kept it laced very tightly, but that it made his back ache if worn while lying down, so that he removed it at night. When he became very tired he took off his support and laid flat on his back on the floor. This change in posture produced a severe burning pain for a few minutes but afterwards there was relief as long as he remained quiet. Figure 19 shows the leather jacket and Fig. 17 is a lateral view of the patient standing. Two additional photographs are introduced representing other varieties of supports for fractures of lower dorsal and lumbar vertebrae. Figure 20 is a man who has a fracture of eleven months' duration of the first lumbar vertebra; and Fig. 21 shows a newly applied support for a fracture of the twelfth dorsal vertebra after nine months. The foregoing history will do equally well to illustrate clinical symptoms of certain cases of hypertrophic arthritis, and indeed this was the diagnosis which was made until x-rays positively identified the condition. It may be stated here that compression fractures of bodies of vertebrae often depend wholly upon x-rays for their positive diagnosis. They should be suspected whenever



FIGS.

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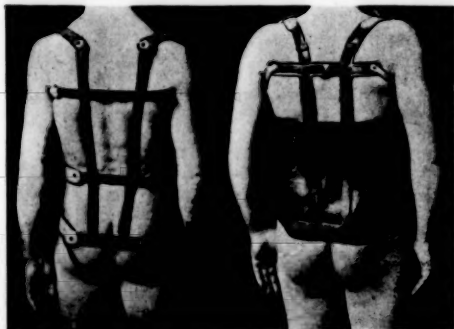


FIG. 20.

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there have been severe injuries followed by long, persistent, severe symptoms.

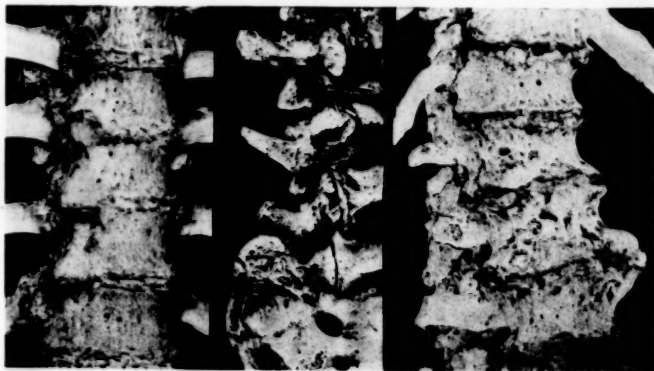
VIII. *Hypertrophic arthritis of the spine* occurs typically in middle age or later, and represents usually results of wear and tear of life, including previous infections, and continual minor mechanical strains and stresses. It is very frequently actively started by trauma, and gouty deposits also are found often associated with such bony overgrowths.

Overgrowths are diffuse many times, but also form sharply localized exostoses in other instances. Fig. 25 is the photograph of the spine of an old man of eighty years, which shows extensive hypertrophic changes and osteoporosis. Abnormal bony processes are seen on bodies of vertebrae and around dorsal articular processes in Figs. 23 and 24. It has been observed that these overgrowths occur around edges of articular surfaces and at attachments of ligaments, that is, in localities subjected to repeated mechanical stresses and strains. In these places of lowered resistance calcareous deposits and patho-



FIG. 22.

logical osseous changes first make their appearance. In some instances they are produced so slowly by continuous slight strains that no painful symptoms are complained of; at other times, considerable pain and disability is produced in shorter time, as is observed frequently around hip joints. The proximity of articulating processes to vertebral foramina in dorsal spinal regions, taken in connection with the small size



FIGS.

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FIG. 26

of these openings, causes nerves sometimes to be pinched when these apertures are pathologically narrowed. At least this explanation accounts satisfactorily for occasional excruciating pains accompanying osteoarthritis referred to regions supplied by emerging spinal nerves. Fig. 22 illustrates variations in sizes of vertebral foramina, and in this specimen the stumps of ribs may be seen held in position by their own ligaments in exact relations maintained during life.

Fig. 26 is the x-ray of the lumbo-sacral spine of the patient figured in 27, 28, 29. It shows extensive hypertrophic changes about bodies of vertebrae and at sacro-iliac joints.

The old man of sixty-five, a gardener, came to see if he could get some support for his back. For four or five years he said that he had been slowly getting more and more out of shape, until finally at the time the photographs were taken he could stand erect less than an hour. He sat in a hump-backed attitude, complained only of weakness, and stated that he always had had a weak back but never suffered from severe pain. This case illustrates how slow extensive changes

may take place without interfering with usual activities of life. It seems plausible to believe that the continuous bending over necessitated by his work increased the bony changes in the back. He was fitted with a temporary plaster jacket, Fig. 28, which was put on with the patient lying flat on his face on a hammock. This gave him the desired support and a leather jacket is contemplated at the time of this writing to assist him permanently in keeping a better posture and to prolong his activity. Examination of his back showed an absence of tenderness, presence of some scoliosis, and the stooping, bow-legged attitude seen in Figs. 27 and 29.

IX. *Infectious Arthritis of the Spine.* A young man of nineteen noticed a gradual development of pain in the back and side along the right costal border. No trauma had been received. His occupation of letter carrier meant carrying thirty pounds of mail suspended from the shoulder in a bag. Soon after pain in the back was first noticed the patient's appendix was removed, and while lying abed the back symptoms subsided, but returned on resumption



FIGS.

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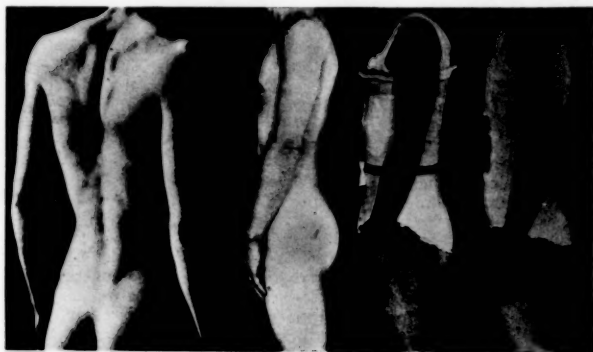
28

29

of activity. One year after onset of pain the appearances shown in Figs. 30, 31, 32, 33 were seen. He is a slender person with contracted back muscles and with scapulae held far back in an involuntary effort to protect the dorsal region of the spine. Back motions were painful and limited. There had been no cough or previous lung trouble and pleural adhesions were excluded in the diagnosis. Fluoroscopic examinations of the appendix region, after the patient had taken a bismuth meal, showed the caecum hanging over the brim of the pelvis from which it could not be raised. X-rays of the back showed an absence of any bony changes in the vertebrae. Careful urine examinations and absence of renal symptoms in the past helped to exclude kidney disease. The nature of the trouble seemed, therefore, to be narrowed down probably to a postural weakness, or to an irritative lesion of bacterial origin, if not due to some very obscure unusual lesion. The existence of marked muscular rigidity without traumata weighed against simple postural weakness as a diagnosis, and instead suggested an active irri-

lation, perhaps a synovitis or the beginning of bone disease. Von Pirquet's skin reaction for tuberculosis was very weakly positive, and the patient accordingly is being treated as an early case of spinal tuberculosis, although the basis for this diagnosis is not entirely satisfactory. With a plaster jacket on, the patient's symptoms have partly subsided, and at the time of this writing it would be unwise to dispute the possibility of infectious arthritis originating from a bacterial focus around the caecum. There has been no urethral infection nor tonsillitis. Figure 30 shows the tense back muscles, and Fig. 31 gives an idea of the antero-posterior curves of the spine.

Jackets shown in Figs. 32 and 33 will be discussed later under treatments. Other infectious lesions of the spine are often designated, namely, those of gonococcal, streptococcal and staphylococcal origins. These are diagnosed very loosely, however, from associations of infections elsewhere in the body. The same statement is true of typhoid spines, and it is often impossible to disprove the existence of spinal symptoms of



FIGS.

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syphilitic origin with past record of syphilis, although we do not recognize specific vertebral lesions usually from x-rays.

*Significance of Anatomic Variations in Lumbar Spines and Sacra; Relaxed Sacro-iliac Joints; Physiologic Variations of Strengths of Back Muscles.* The clinical significance of sacro-iliac joint lesions and of anatomic peculiarities of the lower spine have been made clear by Dr. Joel E. Goldthwait of Boston in a series of papers<sup>1</sup>, and to him all credit for these observations is due. In this article, attention will be paid, therefore, to variable strengths of back muscles and ligaments, their causes and their importance, after reviewing briefly different anatomic variations which are likely to be encountered. All doubts as to the multiplicity of spinal anomalies can be dispelled by consulting the wonderfully complete collections of the late Prof. Thomas Dwight at the Harvard Medical School. Photographs of anatomic specimens used here were obtained through the kindness of Dr. William F. Whitney of the Warren Museum at Harvard. X-rays which give an idea of some anatomic variations most commonly encountered in routine examinations have been selected at random from hundreds of similar negatives through the courtesy of Drs. Walter J. Dodd and G. C. Holmes. And for many clinical records of patients the writer is greatly indebted to Dr. E. G. Brackett of the Orthopedic Department of the Massachusetts General Hospital.

To summarize, briefly, different structural peculiarities, there are slight displacements of sacra on ilia and vertebrae, on sacra occasionally. Transverse processes of fifth lumbar vertebrae at times are exceptionally long, and in different instances, articulate with sacra or iliac bones, or with both, while at other times they simply impinge upon adjacent structures and may, under certain conditions, perhaps, help to produce strains of lumbo-sacral articulations or sacro-iliac joints. Dorsal articulating processes of fifth lumbar vertebrae vary in development at times and may produce unusual strains and postures. Bodies of vertebrae may fuse with sacra, and sacra may fuse with ilia. Unusual anatomical developments may be unilaterally or bilaterally symmetrical ones.

Very important plexuses of nerves are located in the lumbo-sacral region and there are opportunities for them to become stretched or irritated when abnormal relaxations of the parts occur, especially in the presence of various anomalous bony developments or in slight dislocations.

An interesting matter of practical importance is the reason why anatomic peculiarities sometimes produce severe symptoms in backs and legs yet perhaps more frequently cause no trouble whatever though structural variations are present of the same kind and of as great degree. So many striking variations in lumbo-sacral spines have been discovered accidentally

among widely differing conditions that many physicians still are inclined to minimize, or disbelieve entirely in the clinical importance of these many anomalies. All contradictory facts, however, can be explained satisfactorily by consideration of physiologic variations in strengths of back muscles and ligaments.

Effects produced by changing strengths in muscles and ligaments which support the vertebral column are better understood by comparisons with leg muscles in foot strain and flat foot. Structural peculiarities were first features to be understood in foot defects, as are indicated still by the phrases "falling of the arches" and "flat foot." Next it was observed that some individuals with high arches of the feet had painful symptoms, while some very strong, athletic persons possessed very flat feet with no abnormal symptoms; and then the term "foot strain" was introduced, "flat foot" dropping more and more into the background. Finally, strengths of muscles supporting arches of feet were measured from time to time, and it was scientifically proved that there is a temporary relative weakness in these particular muscle groups in foot strain. *Physiologic variations of muscle strengths and resistances of ligaments, not anatomic peculiarities, are usual actual starting points in production of abnormal functional symptoms, but anatomic variations may possess clinical significance as soon as muscles and ligaments weaken appreciably.* Treatment of foot strain no longer consists wholly in supporting weakened muscles with orthopedic strappings and metal foot plates. Attention is paid, also, now to internal medical measures, and to personal hygiene to correct obscure debilitating "auto-intoxicated" states so commonly associated with onsets of abnormal foot symptoms. Weakened muscles in calves of legs have their work minimized by mechanical supports, but simultaneously they are relieved by correction of vascular defects, for vascular irregularities influence all muscles since blood is the common medium upon which all tissues depend.

It should be recognized that backs may be influenced in ways similar to those affecting the feet. Blood of the same quality flows through back muscles and through the extremities, and they both show simultaneously its debilitating or invigorating effects. In some instances in which the feet are used but little, or if the back is naturally a little weaker, painful symptoms appear first in the back when its blood supply becomes poor for a sufficient length of time; while at other times feet give out before other parts. Back and foot symptoms are observed together very frequently indeed.

It is possible to strain muscles by excessive use and this sometimes happens. Changes of the quality of the blood alone on the other hand are apparently sufficient to produce gradually developing symptoms as seen in many cases of debility, without changes of occupation, and without changes of mechanical strain. The



FIG. 34. Variations of lumbo-sacral region of the spine, showing differences in relations of lateral processes of lowest lumbar vertebrae. Also, variations in sacralizations of vertebral bodies.

causes acting in combination are most frequently observed. Back muscles cannot be tested conveniently like the feet, and direct scientific proof of the ideas just presented therefore is impossible; but this theory is well within limits of probability and can be accepted more safely than it can be ignored.

Everyone can readily see from inspection of the photographs of anatomic specimens, Fig. 34, how unusual articulations of transverse vertebral processes may strengthen or weaken the lumbo-sacral spine, making the two sides of the body differ in ways they react to pathological ligamentous relaxations.

Imagine a healthy person with strong muscles of the back, strong sacro-iliac joints, and prominent transverse processes of the fifth lumbar vertebra. If such an individual is overworked long enough and is mentally worried, overeats or has a loss of appetite with mild indigestion for a while, until finally he becomes "run down," there will be a slight lameness of the back slowly developing if relief is not obtained. Back lameness may go on to a dull ache in lumbar muscles, also typically there is a little sensitiveness over sacro-iliac joints. These symptoms are due, without much doubt, to continued slight defects in the circulating blood which lower the resistances of the ligaments and muscles and thus produce strains. In the majority of instances, relief from work, worries and digestive irregulari-

ties comes at this stage of the trouble, vascular irregularities subside, and back symptoms slowly disappear. Adhesive straps tightly applied across sacro-iliac joints help relieve these slight strains of ligaments and muscles, but there are no appreciable sacro-iliac relaxations nor do long transverse processes possess any pathological significance.

If a person happens to receive some unusual strain while in this debilitated condition, as in Case 2 cited above, there may be enough force exerted upon sacro-iliac joints to strain them severely, or possibly produce an extremely slight slipping of the sacrum upon one iliac bone as indicated by symptoms noted of "something giving way." No changes in relations of the joints usually can be made out upon examination, however, and long vertebral processes still possess no harmful significance.

If back pains are neglected and slight relaxations of muscles and ligaments are allowed to continue, it is easy to see how these strains may gradually increase to greater laxities from continued vascular defects or from continuing excessive use of the back muscles. If such chronic relaxed types receive sudden severe wrenches sacro-iliac joints then perhaps may be displaced quite appreciably, and it is possible that transverse vertebral processes also may get caught against the adjacent ilia or sacrum and hold the bones in dislocated relationships with each other. Vertebral processes, however, sometimes may still have no significance, because it is possible for them to be long and yet be situated too far away to strike against adjacent bones; and under such

circumstances, of course, they would not help to stretch ligaments or nerves.

When they actually articulate with bones next to them they may be elements of strength, presumably, instead of weakness. It can be only rarely that unusual lengths of transverse processes and unusual relaxations of ligaments combine to produce harmful conditions.

A few x-rays of lumbo-sacral spines of patients are given in this connection for the sake of completeness and for comparison of anatomic peculiarities with pathologic symptoms. The history of each case is briefly summarized below, and they are grouped under three heads. *e. g.* shadows of transverse vertebral processes which overlap shadows of iliac bones and are associated with back symptoms; second, pathological back symptoms without overlapping shadows; third, overlapping shadows of transverse vertebral processes with iliac bones in patients without back symptoms.

FIG. 35. An Italian laborer, twenty-eight years of age, works in a lumber yard; and three years before he came for treatment he noticed pain gradually come on in the sacral region of the back. He received no definite single trauma. Pain has persisted more or less since its first onset, but has never extended down the thighs. After three years the symptoms became so bad that work was impossible and he sought medical care. Examination showed the back then held stiffly with all its motions much limited. Hip joints did not appear involved. A plaster jacket was put on in a standing posture as soon as the x-ray was taken, and the patient never returned for further treatment. Presumably he was relieved and did not bother to return.



FIGS. 35 and 36.

FIG. 36. A small, thin man suffered with pain in the right leg for six months before he came for treatment. No trauma. Onset gradual. Pain was first noticed in region of the sacrum while patient was lying abed, later this symptom increased in severity and extended to calf and heel. Examination

showed all back motions limited and straight leg raising painful. There was considerable structural scoliosis with what appeared to be an acute strain upon the right side of the lower back. He made only two visits, had an x-ray taken, had supportive adhesive straps put on the back for two weeks, and then disappeared. He was partly relieved at his last visit.

FIG. 37. History given under Case 4.

FIG. 38. Worker in leather factory. A man of forty-nine years with pain in the left hip of six months' duration. Onset gradual. No trauma.



FIGS. 37 and 38.

Examination showed slight lateral deviation of the spine in standing, and tenderness over the left sacro-iliac joint region. The posterior superior iliac spine seemed to be more prominent on the left side. The back was strapped for two weeks and then he was lost track of.

FIG. 39. A ticket agent of thirty years was seized with acute abdominal symptoms, and his previous history of renal trouble led to an x-ray being



FIG. 39.

taken immediately. The picture shows incidentally an over-lapping of the shadows of transverse vertebral process with the shadow of the right iliac bone.

FIG. 40. A man of twenty-nine years, with renal symptoms and renal calculi, shows in the x-ray over-lapping of the shadows of transverse vertebral processes upon shadows of iliac bones.

*Relaxations of Sacro-Iliac Joints.* Articular areas between sacra and ilia vary in size, shape and irregularity of articular surfaces as

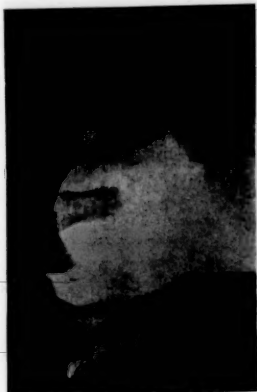


FIG. 40.

photographs indicate in Fig. 41. All these pictures were taken at equal distances from the camera in order that they may be easily compared; and joint boundaries have been emphasized by dotted lines because original smooth fibrocartilages, which can be seen in position still, have shrivelled away from the margins of articulating areas in some instances.

Shallow depressions and elevations on these joints must be thought of as possessing very great importance in increasing joint stability and strength; and sacro-iliac joints should be imagined as two irregularly flat surfaces held together by continuous pull of elastic muscles together with extremely stout, non-elastic ligaments. It is a well-known mechanical fact that friction between two such irregular, tightly held surfaces requires great force to overcome it sufficiently to permit any sliding of the two surfaces on each other, if sliding forces act parallel to the plane of the joint. If there were no elevations nor depressions, sliding could occur much more



FIG. 41.

easily than it does when irregular hollows and eminences are fitted into each other between the two bones. This arrangement makes possible quite a little laxity of ligaments without appreciable slipping; and clinical observations confirm the fact that sacro-iliac articulations are constructed well enough to do their intended work in the very large majority of instances without large displacements.

Nevertheless there are a few rare cases of extreme relaxations, just as there are occasional extreme degrees of relaxations of ligaments of the feet, but severe symptoms are not necessarily associated with them. The weight of the body in very exceptional instances stretches lumbosacral ligaments and nerves so slowly that apparently the latter are able to readjust themselves to altered conditions without many pathological evidences. These extreme conditions are seen usually in delicate persons, generally women who do no lifting, who take no exercise, and who never are subjected to severe strains. Their muscles and ligaments slowly weaken under continuous, mildly debilitating vascular influences until finally the individuals get into very relaxed states; yet typically with only moderate pains after their mild activities.

Slight ligamentous laxities of short duration ought not to be thought of serious import in themselves for they occur normally in pregnancies; but such relaxations do weaken joints temporarily and make them susceptible to sudden twists and traumata. Before the joints can be automatically tightened and strengthened by contractions of muscles, injuries are more liable to occur. Tight ligaments always prevent possibilities of catching articulating surfaces relaxed with their hollows and elevations partly unlocked.

It seems to the writer, upon careful consideration, that we should speak of many lumbosacral symptoms as due to minute relaxations representing more than mild strains which are without any ligamentous stretchings, but on the other hand, less than obvious relaxations that can be made out on superficial, hasty examination; and that corresponding with these microscopic laxities, presumably there are extremely minute displacements which cannot be distinguished on examination, but which patients appreciate and speak of frequently as sensations of something giving way in their backs.

Goldthwait has pointed to the fact that changes in sacro-iliac joints can be determined at the symphysis pubis in front of the pelvis. Upward and downward changes of positions in pubic bones upon the two sides of the midline of the body in relaxed symphyses necessarily represent similar relaxations posteriorly in rigid bony pelvic rings; because motions at the symphysis would be quite impossible if the two rigid innominate bones were held perfectly rigid against the sacrum. There must be slight relaxations of sacro-iliac ligaments at least to permit this play between bony surfaces in front.

To summarize all different sacro-iliac possibilities, clinical data seem to show that slight strains and microscopic laxities are common and that appreciable displacements are quite uncommon. Marked sacro-iliac displacements are produced very gradually without traumata in the manner which has been indicated above; second, they are produced by moderately severe injuries in presence of slightly relaxed joints, and third, in exceptional cases by very severe sudden twists in tightly held joints. In the three varieties of displacements painful symptoms respectively are intermittent and not very severe in the first; more severe and noticed whenever exercise is taken in the second, and extremely severe in the third class. The worst symptoms theoretically should come from very severe traumata acting upon very great relaxations.

This subject of relaxations has been dwelt upon at length because replacements of bones later have to be discussed.

No mention has been made of stretchings of anterior common spinal ligaments, but dissecting room material shows conclusively that laxities of these structures occasionally occur. And presumably signs of strain would be found in them very frequently in hollow backed patients if they were not hidden away so deeply in the body. So when sacro-iliac joints are singled out for special study it is well to remember that low back strains commonly represent multiple lesions of ligaments and muscles.

*Variable Strengths of Ligaments and Muscles of the Back.* If all persons possessed spines and pelvis of exactly the same size and of the same anatomic pattern, there still would be variable strengths of muscles and ligaments left to act, and functional differences among them would be observed from time to time in the same individual, also there would be differences among different persons; so that strains, relaxations and displacements presumably would be observed then as now. Continued stresses and strains of muscles and ligaments themselves slowly produce anatomic changes; and it should be remembered, that, while congenital anatomic bony variations ought to be thought of as contributing causes for functional back symptoms and pains at times, at other times some bony variations simply show the results of previous physiologic influences acting upon bones throughout life. Too much emphasis should not be laid upon anatomical features on the one hand, nor, on the other, upon physiological peculiarities, because both factors are found always in combination, and they ought always to be considered together when interpreting clinical findings or in treating patients.

*Vascular Causes of Variations in Strengths of Muscles and Ligaments.* All tissues are directly dependent upon variable qualities of the blood, and we know roughly the following sets of clinical facts: 1. Rapidly growing, delicate children sometimes have deficiencies of hemoglobin in their blood, probably together with

other unrecognized vascular peculiarities, and these patients very commonly exhibit poor postures due to laxities of muscles and ligaments which result from the poor blood supply. 2. Gastro-intestinal putrefactions associated with secondary anemias and increased aromatic products of putrefactive/decomposition in the urine are frequently accompanied by joint symptoms and similar relaxations of muscles and ligaments. 3. Retentions of urates in circulation in gout are associated with local changes in joints, cartilages, bones and ligaments. 4. Recent studies by Folin, Denis and Seymour<sup>2</sup> in nephritis show that retentions of non-proteid nitrogenous waste products are possible, and that such accumulated products in circulation are accompanied by backaches and joint pains along with gastro-enteric symptoms and feelings of lassitude. Backaches of Bright's disease have become universally known owing to numerous kidney cures, but in this scientific work can be seen how such symptoms owe their origin, in part at least, probably to direct debilitating effects upon muscles, of blood which is overloaded with nitrogenous waste products. Referred back pains of visceral origin may exist, but in view of this scientific work, assumption of their existence is not absolutely necessary for explanation of clinical appearances. 5. Various pathogenic bacteria gain access to the body and products of their growth circulate in the blood, and as a result, infectious joint symptoms, synovitis, muscle spasms instead of muscle relaxations and secondary anaemias occur at times. 6. Cancer of the stomach may be latent, first symptoms complained of occasionally being backache, which then is found to be associated with loss of weight and beginning cachexia characteristic of new growths. Back symptoms in this instance seem apparently due in part to deleterious influences of impoverished blood. 7. Backaches occur with displacements of pelvic organs accompanied with irregularities of menstruation. Backaches also are complained of with relaxations of ligaments of the pelvis during pregnancies. It seems probable, therefore, that changes in pelvic vascularity may underlie slight back strains in menstrual troubles at times, while greater strains and relaxations are due in part to prolonged pelvic vascular changes of pregnancy.

Theoretically, any deleterious influence of the blood, as it acts on muscles and ligaments, may be a remote cause of muscle strain and postural back weakness although we do not know all circulating substances or vascular combinations which produce debilitating effects. It seems probable, upon physiological grounds, that vascular causes are fairly numerous. Therapeutic procedures, at least, should be directed always toward restoring blood to its usual standard in addition to prescribing physiologic exercises and mechanical orthopedic supports for weakened or irritated muscles.

*Backaches of Other Origins.* Rarer causes of backaches are local pressures produced by

metastatic cancerous growths in vertebrae and by fibromata of the coverings of the spinal cord. Neuritis of the peripheral nerves is caused by toxic influences of the blood sometimes and must be considered especially in the group of sciaticas. Diseases of nerve cells also must be included in a complete list, and herpes zoster and intercostal neuralgia have to be mentioned, as do the psychomyalgias and hysterical manifestations.

Small tears of numerous ligaments and small ruptures of back muscles probably give rise at times to sensations of something giving way, as well as slippings of sacro-iliac joints. Periosteal inflammations occur and myositis can be made out in some instances as localized sensitive lumps of contracted muscle fibres in the larger muscles. These disappear under gentle massage.

Adhesions of pleural and peritoneal membranes are spoken of rather loosely as causes of back pains, but these, together with so-called reflex pains of pelvic and abdominal origin, must be dismissed without further comment.

#### TREATMENT OF CHRONIC BACKACHE.

Treatments may be classified under:

1. Mechanical supports for weakened conditions.
2. Immobilization for irritated states.
3. Corrective orthopedic appliances for deformities.
4. Surgical measures; trimming superior angles of scapulae, bone grafts for fractured vertebrae, excisions of long transverse processes of lumbar vertebrae.
5. Physical therapeutic treatments,—hydrotherapy, massage, baking, electrotherapy,—for systemic hygienic effects and local stimulations. Gymnastics and manipulations for correction of deformities.
6. Drug treatments to alter and regulate various physiologic functions of the organism as a whole by changing vascular conditions.
7. Changes of diets to prevent accumulations of waste products in circulation.
8. Personal hygienic measures of rest, fresh air and sunshine.
9. Special measures of various sorts required in treatments of internal organs when the latter contribute to back symptoms.

Attention will be paid in this paper only to a few of the above mentioned treatments, as it is not necessary to emphasize, for example, that adhesive strappings are used very often to hold drooping shoulders in comfortable positions, that suitable strappings assist back muscles in positions of great strain by limiting forward bending, that they may be used to reinforce sacro-iliac joints and to lessen the work of gluteal muscles; while advantages of steel braces, leather corsets, plaster-of-Paris jackets, canvas belts and other apparatus are described in textbooks.

*Variable Efficiencies of Orthopedic Treatments.* The leather jacket in the case of frac-

ture of the spine, Fig. 19, does not hold the back as well as supports which hold the shoulders do. Figs. 20 and 21. It is doing some, but not the most, service possible with comfort. The plaster jacket in the case of infectious arthritis, Fig. 33, is more efficient in immobilizing the lower dorsal region of the spine than the one shown in Fig. 32; but, because of the slightly different posture, there happened to be developed new strains in the lumbar region which were not caused by the other jacket. Both were doing some good. The spinal-abdominal belt in static back strain, Fig. 4, made the patient feel so much better that she did not want a more efficient one, yet the lateral deviation was not corrected by it. The webbing belt in Fig. 16 was being worn so loosely that it was of limited use, and adhesive strapping, Fig. 15, held the patient much more firmly. Similar conditions were observed with the belt worn by the patient figured in 5, and strapping quickly produced improvements. It should be noticed in this case that wrinkled diagonal straps shown in the illustration were efficient in checking painful extremes of forward bending, although they look useless in the photograph. The little girl in Figs. 9 and 10 had been fitted with a spring back brace, but one of the shoulder straps had broken and the brace had been discarded entirely after a few months.

Satisfactory mechanical efficiencies combined with comfort in wearing of supports is frequently very difficult of attainment with different kinds of braces, jackets, corsets and belts. It is especially difficult to maintain these combined conditions *continuously* long enough to relieve chronic troubles for which such apparatus has been prescribed; and many things besides new kinds of appliances are needed. Of equal importance to final results are numerous economic and social factors, because they are included in the chain of circumstances upon which all successful treatments of chronic troubles depend. The weakest link in the chain, not the most elaborate one, determines the strength and success of the whole, and, accordingly, a broad view of the entire existing situation is desirable.

Some persons receive care irregularly on account of living in inaccessible rural districts and these circumstances are causes of poor success.

At the present stage of advancement it seems that patients have a right to demand of physicians, whether specialists or general practitioners, that they shall be reasonably familiar with theories of rational treatment of chronic diseases, and shall be able to distinguish whether appliances as being worn, are mechanically efficient or inefficient. If attempts are made at putting on plaster casts, physicians should have sufficient understanding of possibilities and limitations of various postures to make jackets really do the work for which they are intended. It is not too much to expect now that some attention shall be paid to personal hygiene, and to simple regulations of normal organic functions with appropriate well-known drugs. There

ought to be wide enough comprehension of conditions, also, to prevent medical gymnastics and exercises being given when rest and local supports are indicated, or *vice versa*, yet mistakes of these kinds are very commonly seen.

#### SURGICAL TREATMENTS.

These can only be mentioned and references given to more extended discussions of individual methods.

*Transverse Processes of Fifth Lumbar Vertebrae* have been removed by surgical operations, and subsequently back symptoms have promptly disappeared, but this procedure is open to the serious criticism that it does not prevent recurrences of sacro-iliac strains. It is quite possible that rest accompanying surgical operations relieves symptoms mainly instead of removals of tips of lateral processes.

There are instances of very undesirable after effects of such operations, so they seem unjustifiable to the writer except in the extremely few severe cases of long duration, of undoubted diagnosis, in which everything else has been tried without success.

This subject is discussed by different members of the American Orthopedic Association in connection with a paper by Blanchard and Parker.<sup>3</sup>

*Fractures of Vertebrae* generally are treated with plaster jackets and with steel back supports, but during the past few years bone grafts have been successfully made in these traumatic cases, and it seems possible results may show in the future that surgical measures will more quickly relieve chronic back weakness which such patients complain of for long times after their injuries. Unrecognized fracture of the spine without paraplegia has been recently reported in an interesting article by Dr. J. B. Hartwell.<sup>4</sup>

*Scapulae Operations* are very effective in permanently relieving a small proportion of cases complaining of shoulder pains. Middle aged patients with symptoms of many years duration show best results, and operations upon angles of shoulder blades are not open to serious objections that can be raised against those upon transverse processes of lumbar vertebrae. Details of late results of operations in these cases are given in a previous paper by the writer.<sup>5</sup>

*Ether Manipulations for Sacro-Iliac Displacements* are very successful in a few instances, and sharp clicks are felt or heard as reductions of slight slippings are made by means of hyperextensions of thighs, or twistings of the spine, and other manipulations. Rough handling, however, is likely to increase or change instead of diminish displacements. It is easy to see how this may happen from reference to the outlines and surface irregularities of articulating areas in Fig. 41.

The same force applied in the same way need not necessarily produce identically the same result in different individuals. If directions of forces applied therapeutically are not the re-

verse of those causing displacements they may substitute other displacements for ones already present, and there are no reliable methods of telling whether over-corrections are made or not because changes in positions of bones are so small. Bony variations are so common that differences noticed, upon deep palpation in sacro-iliac regions, of the two sides of the body are not always reliable, and certainly it is difficult to conjecture precisely what were the strengths and directions of sudden twisting strains which ushered in the pathological symptoms.

It is safe, however, to manipulate sacro-iliac joints gently when muscles are relaxed by ether. Success sometimes attends these efforts, and, if perfect replacements are not secured, no harm is done if care is used, because new strains produced in unsuccessful gentle handlings will subside during the period of recumbency at the time plaster supports are worn afterwards. Severe chronic cases are the ones to be subjected to this form of treatment, and the patient figured in 13 and 14 with persistent forward and lateral bending of the body eight months after onset of symptoms, illustrates a suitable case.

#### SUMMARY.

An attempt has been made to show that many things besides new clinical experiments and laboratory studies are required for improvements in treatments of backaches. The great value of careful surveys which are eliminative rather than additive in nature is insisted upon; and it is suggested that excessive accumulations of new data and therapeutic agents may hinder instead of accelerate progress, when they become so numerous as to overwhelm systematic classifications and rational conceptions, and if they compel practitioners to take handiest, most attractive untested novelties instead of most efficient methods and ideas.

Numerous details have been presented in a review of a few typical cases of different kinds of back troubles, and this review has been extended enough to indicate different anatomical, physiological, social and economic facts which must be understood for most successful management.

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- <sup>2</sup>Makroin Seymour: *Interstate Medical Journal*, Vol. xxi, No. 9, 1914, "Gastro-Intestinal Disturbance Due to Nitrogen Retention"; Folin, Denis and Seymour: *Arch. of Int. Med.*, Vol. xiii, pp. 224-234, February, 1914, "The Non-Protein Nitrogenous Constituents of the Blood in Chronic Vascular Nephritis (Arteriosclerosis) as Influenced by the Level of Protein Metabolism."
- <sup>3</sup>Wallace Blanchard and Charles A. Parker: *American Journal Orthopedic Surgery*, October, 1915, "Resection of the Transverse Process of the Fifth Lumbar Vertebra for the Relief of Painful Back."
- <sup>4</sup>J. B. Hartwell: *American Journal of Orthopedic Surgery*, February, 1916, "Unrecognized Fractures of the Spine without Paraplegia. A Study of 14 Cases."
- <sup>5</sup>H. W. Marshall: *BOSTON MEDICAL AND SURGICAL JOURNAL*, June 2, 1915, "Late Results of Surgical Treatments for Flexed Scapula with a Discussion of the Subject."

#### Original Articles.

### FRACTURE OF THE LUMBAR VERTEBRAE AND TRANSVERSE PROCESSES. A REPORT OF FOUR ADDITIONAL CASES.

By JAMES WARREN SEVER, M.D., BOSTON.

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IN *Surgery, Gynecology and Obstetrics* for March, 1916, the author has already reported seven cases of compression fracture of the lumbar vertebrae following severe falls or accident. These four cases are an additional series, and bear out my previous statement that such fractures are much more common than is ordinarily supposed.

The fractures in these cases involved:

1. The twelfth dorsal and first lumbar and a portion of the fourth lumbar.
2. The first lumbar.
3. The twelfth dorsal, first and second lumbar.
4. The transverse processes of four lumbar vertebrae besides the disarticulation of the last rib on the same side.

They were all caused by falls from a height varying from 40 feet to 20 feet, with the exception of the last, this being a crush by a heavy truck wheel.

I will not go into the mechanics or general discussion of these cases, for these points have already been covered by my report of the previous seven cases.

A summary of the location of the fractures in the eleven cases is as follows:

Location of fracture.	Individual vertebrae included.
12th dorsal .....	2
1st lumbar .....	5
2nd " .....	4
3rd " .....	1
4th " .....	3
5th " .....	2
TOTAL .....	17

Location of fractures in individual cases:

1. Twelfth dorsal—first lumbar and a portion of the fourth lumbar.
2. First lumbar.
3. Twelfth dorsal and first and second lumbar.
4. The transverse processes of four lumbar vertebrae including the distraction of the articulation of the twelfth rib on same side.
5. The first lumbar.
6. The first and second lumbar.
7. The second lumbar.
8. The second and third lumbar.

9. The fourth lumbar.
10. The fourth and fifth lumbar.
11. The fifth lumbar.

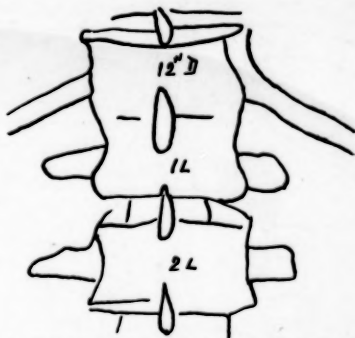
It may be seen from a study of these two tables that the first and second lumbar vertebrae are the most frequently involved, with the fourth following next in order.

CASE 1. F. N., age 48, carpenter. This man had a fall of 45 feet on May 28th, 1915, following which he was taken to a private hospital, where he stayed in bed eleven days. He then went home and later went to work again as a carpenter's foreman on August 16th, 1915. He was made unconscious by the fall, but so far as he knew suffered no broken bones, and received nothing but a strained back and a general shaking up. He never had any trouble with his legs, either in sensation or ability to move them, and he had no incontinence of his bladder or rectum.

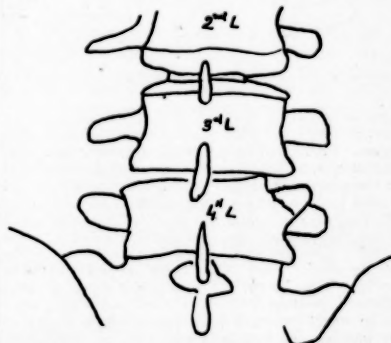
I saw him first on October 9th, 1915, because of constant pain in his back, he having been sent to me by his own physician. An x-ray was taken by me, which showed that he had sustained a fracture of his twelfth dorsal and first lumbar vertebrae, besides breaking off a corner of the fourth lumbar vertebrae. See tracing of x-ray Nos. 1 and 2.

There was some diminution in the height of the twelfth dorsal and first lumbar vertebrae, and marked bony proliferation between them so that they were practically one vertebra. There was no lateral displacement or tipping. The fourth lumbar showed the upper left corner broken off, and displaced downward and outward. There was also some asymmetry of the body, but I could make out no definite crush of the body. Clinically, he had a very stiff, lame back with limitation of motion in forward and side bending, and considerable muscle spasm. He was fitted to a spring back brace which gave him some relief. There was no kyphos and no nerve involvement that could be determined. Not knowing that he had a fractured spine, this man was able to go back to work and do more or less his usual routine, until after he found out what the actual condition was. Then he at once developed considerable disinclination to work, and the mental change was quite striking, as soon as he knew he had a "broken back." He will be able to work as before, but probably will not ever be able to do heavy lifting or much stooping or bending, without more or less discomfort.

CASE 2. W. C., female, aged 25, single. During the night of April 2nd, 1915, this young woman walked out of a second story window in her sleep. She fell about 12 to 15 feet into soft ground where she was found later, unable to get up. She was taken to a nearby hospital where she stayed for seven weeks, and where she was treated for several weeks for hysteria. She stated that she lost feeling in her legs at once, but could always move them. Two weeks after the fall, she became incontinent, which condition continued for nine weeks. At first she had considerable pain in her back all the time, but has had none of any moment since nine weeks after accident. Three months after the accident she could walk alone with a cane, and now (September, 1915), can walk about 100 yards alone. Is able to get up and down stairs, only with considerable difficulty.



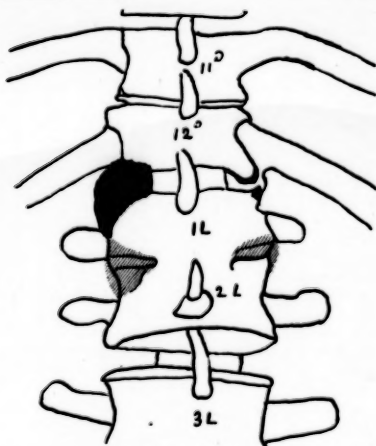
No. 1. Same case as No. 2. Note fusing of 12th dorsal and 1st lumbar.



No. 2. Note fracture of upper left corner of 5th lumbar vertebra.

Examination showed a poorly developed and nourished young woman, who walked with difficulty with a cane. There was considerable backward tilt to the trunk, and toe drop of right foot in walking. The abdomen was scaphoid. The spine not very flexible, with considerable increase backward in the dorsal convexity. There was a suggestion of a kyphos in the dorso-lumbar region standing up. The knee jerks were very faint, especially on the right. The thigh muscles were apparently normal, as well as the hamstrings. The right foot was held in equinus and showed that the gastrocnemius, and common extensor of the toes were very weak. The left foot was apparently normal, except for a weak gastrocnemius. Sensation was diminished only slightly on the right lower leg, and over the buttocks and upper thighs posteriorly in a saddle shaped area. In lying prone the kyphos was more marked, and was evident over the twelfth dorsal and first lumbar region. X-rays, see tracing No. 3.

The x-ray showed that she had sustained a crushing fracture of the twelfth dorsal and first and second lumbar vertebrae. There was an asymmetry of the body of the twelfth dorsal, the body being slightly wedge shaped, the apex pointing toward the left side. There was also evidence of a more extensive crush of the body of the first lumbar, it



No. 3. Fracture of 12th dorsal, 1st and 2nd lumbar vertebrae. Shaded areas represent callous formation.

apparently having been reduced in height considerably, as compared with other normal bodies of that region. There had been considerable new bone formation about the edges of the vertebrae, especially on the right side of the twelfth dorsal and first and second lumbar, with partial obliteration of the intervertebral space between the twelfth dorsal and first lumbar, and total obliteration of this space between the first and second lumbar bodies. The tracing of the x-ray is not very accurate, but was the best I could get. The shading represents the callous formation.

She was fitted to a back brace, which improved her walking and standing, and gave her more comfort. She evidently had had some cord injury, which accounted for her paralysis at first, and the present condition. She is gaining slowly, and in view of this fact, I felt that she might continue to gain for another year or so. If at the end of that time she was no better, or if she became worse meanwhile, some other procedures could be devised to help her. At present she seems to be doing about as well as she could with massage, electricity, and muscle training.

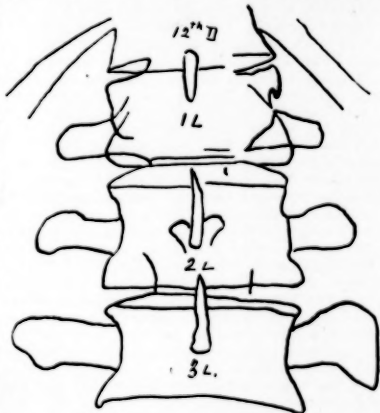
CASE 3. F. W. G., male, aged 43, carpenter. Accident, April 28th, 1915. This man fell a distance of about 30 feet from a gutter to the ground. He landed with his buttocks in a soft flower bed, and his back on the turf. He was conscious at first, but soon became unconscious. He was taken to a nearby hospital where he stayed 14 days. Besides hurting his back, he fractured two ribs on the right side, low down. He also sustained a fracture of the right wrist, and of one of the metacarpal bones of the right hand.

After leaving the hospital he went home and stayed in bed a few days, and three weeks later was able to go to Boston. Since July, 1915, he has worn a spring back brace.

This man never had any disturbance of sensation in the legs, could always move them freely, and had no loss of control of his bladder or rectum. I saw

this man five months after the fall, and he was still complaining of some pain and a soreness in the back. Examination showed that his back was fairly flexible except to side bending. There was no kyphos, but he was tender over the region of the fourth lumbar. No disturbance of motion or sensation of legs. Knee jerks normal.

The x-ray of his back (see tracing No. 4) showed that he had a compression fracture of the first lumbar vertebra, not very marked in degree and causing no especial deformity. He was advised to con-



No. 4. Crush fracture of 1st lumbar. Note irregular outline of body of 1st lumbar and decrease in thickness of body.

tinue with his back brace, and not to try to do heavy work. In time I should think that he could do his usual work.

CASE 4. G. F. F., aged 49, male. This man was injured on September 27th, 1915, by being run over by the hind truck of a heavy pole carrying machine. He fell from the front truck, as the horses started quickly, and tried to get out of the way of the hind wheels, one of which apparently passed obliquely over his left flank, from below, upward. He was unable to stand up, but lay on the ground until found later and taken to the hospital, where he stayed about five weeks. Since going home his back has been painful, sore, lame and stiff, and he is unable to work.

Examination showed that his back was very stiff and irritable, especially in the lumbar region, and his forward and side bendings were considerably restricted. It hurt him to twist and hurt him considerably in getting up and down from the bed. There was no apparent deformity of the spine except that he had a slight right lateral curvature, probably occupational. His legs were normal and his sensation and knee jerks were normal.

The x-rays of his spine showed the following rather unusual condition, but in view of what happened to him just about what might be expected. (See tracing No. 5). The left side of the lumbar spine showed that the articulation of the last rib had been partly torn away, the tip of the transverse process on the left of the first and second lumbar vertebrae had been broken off, and practically the whole of the transverse process of the

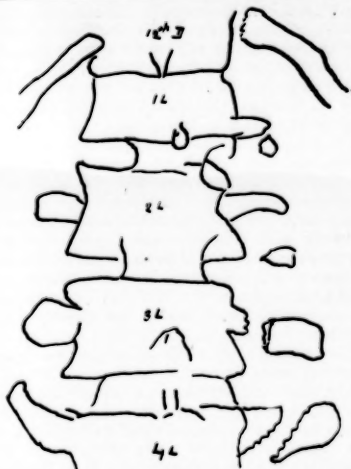


FIG. 5. Note fracture of transverse processes on left, with partial disarticulation of 12th rib on left.

third and fourth lumbar vertebrae on the left, had been broken off. There was no apparent injury to the vertebral bodies themselves.

This injury was the result of direct violence, and if the man had not been fortunate in being heavily dressed, would have caused more damage. He should make a good recovery with support to his back, but will always probably have a rather stiff and lame lumbar spine, which may cause him discomfort and some disability.

NOTE:—Since the above paper has been in the hands of the Editors, the author has had four more cases, all without nerve symptoms except one, who has partial leg paralysis as a result of a crush fracture of the 9th dorsal and the 11th and 12th dorsal and 1st lumbar bodies. The other involved the 1st and 2d lumbar; the 12th dorsal, the 1st and 2d lumbar; the 1st and 2d lumbar; and the last the 1st and 2d lumbar likewise. All these cases were the direct results of falls, from heights of from 60 to 12 feet. This makes a total of 15 cases.

## OCCUPATION AS A REMEDIAL FACTOR IN HOSPITALS FOR THE MENTALLY SICK.\*

By EMILY L. HAINES, BOSTON.

Supervisor of Industries, Massachusetts State Board of Insanity.

THE character of a hospital is such that we may say, with safety, that no one has entered as a patient with an expectation of pleasure.

\* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 18, 1915.

We can also say, with equal safety, that many patients look back upon their sojourn in hospitals with pleasure, as well as with lively gratitude. In support of this statement, there are found in each hospital patients who, after their recovery, have insisted upon remaining longer in the institution.

There is, in fact, very much that gives pleasure to the patient; but, as in life outside the gate, it depends upon the patient and his or her power to enjoy.

There is an impressive proportion of patients who might still be left to the doom of daily tedium and aimlessness, but who instead rise daily with some feeling of purpose, and retire at night with more or less of the sense that the day has meant something, and that something has been done. This recovered sense of purpose has come with the discovery that they, the patients, are again capable of action and of work.

The increased activity that prevails in our hospitals for the mentally sick has come from the full persuasion that work is the great remedial principle, and that occupation, in a greater or less degree, and for each according to his or her personality, gives to each day diversion, interest and benefit.

What this means, not only to the individual patient, but to the large aggregation in our state institutions, is understood from the fact that on October 1, 1914, there were in the 13 state and 25 private institutions for the insane, in Massachusetts,—14,619 insane patients.

This large number of mentally ill is continually increasing. The patients must be cared for, and as many as possible must be returned to their former places in the community. Some will be able to pick up but a part of the broken threads of their former life, and others—a large number—will have to remain patients in the institutions for a prolonged period of time.

Work by patients has always been done to some extent in the hospitals of Massachusetts. In the earliest records of the hospitals of this state, work has been emphasized because of its beneficial effect upon the patient, mental and physical: for the pleasure derived from work and also for the economic value of the labor to the institution.

Occupation has a curative effect upon the patient, and labor has been recognized as desirable for both the patient and the institution. Patients have been given a part in the household duties, outdoor work upon the farm, and in various trades.

The first report of the Worcester Lunatic Hospital, 1833, points out that the convalescents should not be idle. The second report of the same institution remarks: "It is believed that an appropriation for additional means of giving occupation to the patients,—such as shops for various mechanical and handicraft pursuits—would answer a valuable purpose."

The making of shoes was begun in the winter of 1837. Mattresses, and basket-making are mentioned in the 9th report—1842.

A description from the 7th annual report (1840) of this same hospital gives us a clear impression of hospital life at that time. The opening of the day's work is set forth in the following vivid portrayal:

"The regular laborers are called for, the farmer knows whom to call to his assistance; the overseer of the shoeshop comes for his workmen; the washers are conducted to the wash room by their attendant; the laundress goes for those who labor in her department; the seamstresses assemble in the sewing room, and the woodman, with saws and axes ready, summons as many patients as he has tools provided for to saw and split the wood.

"In each department, before the laborers are called for, the overseer has everything in readiness to commence immediate operations. Before this time the cows are milked and fed, the pig-gery is well provided, the horses are fed and harnessed by the farmer and those individuals who are designated for this duty. A number of male patients are engaged in outdoor duties before breakfast. The washerman assists in making preparations for the labor of the day, one man collects the clothes for the laundress; another feeds the poultry and a third roasts and grinds the coffee; in summer one man drives the cows to pasture, another goes to the post office, and another cleans the harnesses, horses, etc.

"These patients who remain in the halls are scarcely less busy. In the female department sweeping, knitting, sewing, reading, writing, swinging, walking and games occupy the attention of nearly all the patients.

"In the male department those who do not labor abroad engage in walking, games of various sorts, such as draughts or checkers, chess, backgammon, the different games with cards, reading, writing, conversation, politics and theological controversy, music, etc."

It can be readily seen that the increased number in our institutions has made it a difficult and almost impossible task to occupy all the patients by these modes of employment. Many need just the kinds of work we have enumerated, while to others such occupations are ill suited. In many cases the patients would not be interested and would not enjoy the work. Finally, the patients are often in too disturbed a state for coöperative occupation.

Thus there is a large number for whom some other occupation must be found which will make the time pass more agreeably and will relieve the monotony, and which will tend to benefit the patient's mental and physical condition.

Occupation must be found for the old lady who has been 20 years, or possibly more, in the hospital, and who probably spends most of the day in her chair. Again, for the younger woman who has been carefully nurtured, and who will be glad of an interest which will furnish

a tie with the outside world. There is, likewise, the case of the young student. Many of these require the stimulus of something new to them, and which is not strictly utilitarian.

To reach this large number of mentally ill, many occupations, therefore, must be provided. These must extend and progress from the simple to the complex, so that each patient, so far as practicable, may be benefited.

It thus has come about that, in addition to the class of occupations mentioned in the report from which we have quoted, many kinds of handwork have been introduced into the hospital curriculum. As a consequence, two or more instructors are engaged in each hospital in teaching new kinds of work, and in continuing the branches of work which are already being pursued.

This occupational work is carried on in the industrial rooms and upon the wards.

The ideal industrial room should be light, sunny, and in every way attractive, and should possess unforeseen appeals and possibilities for work which will invite daily attendance. The atmosphere of such a workshop is a change from the life upon the wards, and the patient clearly enjoys it.

For the patient who is unable to leave the ward some kind of work is provided. Such a provision is not merely advisable but directly promotes the well-being and peace of these patients. It is a pleasant sight to see a group of 8 or 10 white-haired women sitting in a sunny corner of a ward, sewing or knitting. We feel that they are enjoying the work together.

In the list of occupations, some necessarily stand out with greater prominence. For some years the weaving of towelling, denim, blankets and rugs has been done by men, and to some extent by women. In the past two years, to the looms already in use a total of 39 looms have been added in nine of the institutions. During the last few years fine shuttle weaving has been introduced. This work gives exercise, requires concentration, and possesses ever new possibilities in color and design, which gives delight and enthusiasm to the weaver.

Many patients in our hospitals take the same pleasure in the creation of something beautiful and useful as does the skilled worker outside, and appreciation is as welcome to the patients as it is to the outside worker. All cannot, nor do all hope to be, skilled workmen, but there is enjoyment and pleasure to each in his own achievements and in the success of his neighbor, who perhaps has progressed beyond the trials of the amateur.

Basketry is another mode of occupation which is valuable. The basket grows quickly, has a purpose, and is often the beginning of an interest in itself and in other kinds of work.

Again, rug making is one more industry which gives opportunity for several varieties of work. Many of the hospital stores come in bags of burlap. These are generally more or less

torn. They are passed through the laundry and then given to patients to be raveled, knotted, and made into skeins. The patients doing this may lack mentality for more complicated work; but it is an occupation, and is of value outside a form of "busy idleness."

In one of the hospitals, a woman, who had spent her days for over 20 years sitting with her hands to her head, and had done really nothing, has recently been induced to ravel burlap, and knot and wind. Now, as a result, she is not satisfied until, each morning, the nurse has given her her work. She sits with a chair in front of her, around the back of which she winds her skein, and she is a picture of contentedness. The skeins are dyed and then wound into balls. These burlap strands are used in fine weaving, in rug weaving, and tied and hooked rugs.

Pottery is one of the latest of the crafts to be introduced in state hospital work. Three hospitals already have their own kilns, and further development in this branch of work is foreseen.

In addition to these several kinds of occupational work, metalry, leather work, knitting, crocheting, embroidery and plain sewing all have a place and serve to provide a choice of interests.

To further the work of therapeutic occupation eight state hospitals in Massachusetts last year gave a course of instruction in occupation to nurses, as a part of the regular training school course. The instruction varied in different hospitals, but included lessons in basketry, weaving, leather work, metal work and pottery; also knitting, crocheting and embroidery. This instruction is not only of benefit to the patient and the institution, but is of value to the nurse, whether she elects institutional or private work. And, quite outside this factor, should the nurse never use the knowledge, the experience thereby acquired in manual work is amply worth the time and effort given.

With the nurse upon the ward, interested in having her patients employed, a greater number can be systematically reached.

We have, in a few words, tried to show the ends that may be attained by occupation as a means of treatment in our hospitals. We have shown how, by the varied modes of this treatment, the patients may become gradually vitalized with interest, the dull monotony of their days alleviated, and they are sent on the path towards recovery. Moreover, patients have not only been restored to health, but in some instances have left the institutions prepared to practise as a profession or trade the work in which they have become interested, and more or less expert, during the course of their treatment.

Occupation, as a remedial measure, is a field of wide and far-reaching possibilities. In its exercise it draws upon all the arts, and becomes enriched by everything of color, of form and of

design. It presents a fair horizon, towards which many may wander, and by various paths to the desired goal of peace and restoration.

## ALCOHOL IN RELATION TO MENTAL DISEASE.\*

By A. J. ROSANOFF, M.D., NEW YORK.

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THE question of the use of alcoholic beverages may be considered either from a moral or a scientific point of view. Personally, I prefer the latter; not because of any notion that the moral issue that is involved is of the lesser importance; but because I believe that the question in its moral phase will answer itself automatically, as soon as we have become clear with regard to its scientific phase, and, in any event, not before.

Accordingly, I come to you not as a temperance propagandist, but merely as a physician interested primarily in the preservation of human health, particularly mental health, on account of having for many years now devoted almost all of my time to the study of mental disease.

I would indeed say, to begin with, that if alcohol is beneficial, then there can be no moral objection to its use. If, however, the facts should show us that alcohol is, on the contrary, harmful to health, then, it seems to me, it would be neither moral nor prudent for us to fail to take cognizance of that showing, and to fail to allow it to guide us not only as individuals, in our private lives, but also as citizens, loyal to the welfare of the community of which we are a part, and working for improvement in its laws and customs.

### I. SUBJECTIVE MANIFESTATIONS.

A person who has taken a moderate amount of alcohol is conscious, as a rule, only of pleasing effects; there is an increased sense of physical well-being, a happy-go-lucky mood, a certain freedom from that more or less painful shyness or reserve in conversation, with which most of us are more or less familiar; and from the standpoint of the man who has become habituated to the use of alcohol, there is nothing more to the whole question.

Consciously or unconsciously, the drinking man is even apt to harbor a prejudice against any external evidence that may be offered showing alcohol to be in any way harmful. Though he may be credulous enough in other matters, he becomes in this connection remarkably conservative and skeptical.

On the other hand, he is apt to give the faintest arguments in justification of his drinking.

\* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 18, 1915.

Professor Kraepelin of the University of M $\ddot{u}$ nich, who is a celebrated authority on the subject of alcoholism, and whose observations and opinions I shall have to quote many times in the course of my address to you this evening, has recorded some of the more amusing arguments which, I think, will interest you.

One patient said, "I bought the drink with my own money."—Another said, "When there is no work one goes to the saloon; where else is he to go?"—Still another, "When I don't drink beer I am not well; I should die in six months if I drank only water."—One laborer even said that when he takes the proper amount of beer at noon then after four o'clock his work is no longer an effort for him, as "after that the beer does the work."—"While it is the heat of the fire or the warmth of the work room that drives the blacksmith, the brassworker, the glass-blower, and the baker to the whiskey bottle, the same service is performed for the cab driver and the watchman by the cold night air. Brickmakers, working in dampness, as well as millers and plasterers, compelled to inhale dry dust, find their salvation in drink."—An employee of a steamship company said, "In such a large business one could not get along without drinking."

It is not uncommon for drinking men to regard all talk against drink as mere hypocrisy; one, for instance, held the idea that to live without drink was an impossibility; and when told by his physician that Professor Kraepelin, for one, lived entirely without it, he said, "Go on, Doctor, the professor takes his toddy just like everyone else!"

The most that a drinker will generally admit is that one should not drink to excess. Close questioning, however, is apt to bring out the idea that drinking to excess here means drinking to the stage of paralysis. One man, a case of alcoholic dementia, told me that he drank on the average a pint or a pint and a half of whiskey daily. "As to drinking to excess," said he, "that I never did; I was always able to navigate."

Let us now turn to the scientific data pertaining to the effects of alcohol.

## II. LABORATORY EXPERIMENTS WITH ALCOHOL.

In 1903, Dr. L. Schnyder, of Switzerland, carried out a series of experiments to test the effect of moderate doses of alcohol upon muscular work. At about the same time Dr. A. F. Hellsten, of Sweden, carried out a similar series of experiments. Muscle efficiency was tested in the laboratory by means of an ergograph after the subjects had taken alcohol, and compared with the efficiency shown by the same subjects without alcohol.

I might add here that an ergograph is an instrument invented by Professor Mosso, an Italian physiologist. It consists essentially of a board, on which the subject of the experiment rests his arm, and at the end of which there is a pulley; the cord passing over the pulley has

at one end a brass ring which is grasped by the subject's index finger, and at the other end a weight of about two pounds. As the subject bends his finger he raises the weight, at the same time automatically registering on a strip of paper the height to which he has raised it. Of course, no subject can repeat this operation indefinitely; before long, fatigue sets in and the record on the paper begins to show a gradually lessening height, until finally complete exhaustion of the muscle renders impossible any further movement of the weight at all. The total performance is then calculated from the number of times and the heights to which the weight has been raised.

Both observers, working independently, were led by the results of their experiments to formulate practically the same conclusion, which may be stated as follows: the effect of alcohol is twofold, as a food and as a poison, producing at first a rise in muscular efficiency, and in about fifteen minutes the beginning of a rapid and progressive decline, the net result being a loss amounting to about eight per cent.

In 1900, Dr. E. Kürz, working in collaboration with professor Kraepelin, instituted a series of experiments in the laboratory of the University of Heidelberg, with a view to determining the effect of alcohol upon simple mental processes, such as are involved in additions of one place numbers, free associations of ideas, and memorizing numbers.

These experiments and the methods of sizing up their results are very complicated, and an attempt on my part to describe them to you would lead us too far into technical details; suffice it to say here that the general result was a reduction in the efficiency of these mental processes, varying in degree from three to twenty-seven per cent.; doses taken daily produced an increasing cumulative effect, so that it seemed that each successive dose added its effect before that of the preceding doses had completely worn off.

Numerous experiments similar to these, and others differently planned, have since been performed in laboratories all over the world with practically the same results; so that we are forced to conclude that moderate doses of alcohol impair both physical and mental efficiency, and that such doses, if taken daily have an increasing cumulative effect.

## III. ALCOHOL AND INSANITY.

Let us proceed now to consider briefly the effects upon the mind of prolonged and intemperate drinking. These effects are most clearly shown by the end products of such drinking as they may be observed in hospitals for the insane.

The most recent available statistics of the New York State Hospital Commission, show that of all male first admissions to the state hospitals of New York during the year ending September 30, 1913, alcohol figured as a cause in 22.2%. This does not include the 12.4% in which there was

also a history of intemperance, but the insanity, in the judgment of the physicians who furnished the statistics, was not attributable to it; nor does it include the 43.8% in which alcohol was said to have been used moderately. In view of what has been learned concerning the effects even of single moderate doses of alcohol, I think it is impossible not to feel that some unascertained degree of harm has been produced by the alcohol, even in the two last mentioned groups of cases, although a conservative judgment has refused to attribute a causative influence to it.

Among the female admissions the percentages are much lower, as might be expected.

I offer these New York state statistics, I assure you, without the slightest feeling of pride. I am quite sure your state could make a very similar showing.

Let us now analyze a little more closely the 22.2% of cases which I have mentioned as having alcohol as a cause. They may be divided into two sub-groups.

One of these sub-groups consists of forms of insanity which develop mainly on the basis of an hereditary tendency, and which often enough occur without alcoholism; here the alcohol acts in the manner of a *contributing cause*.

The second and larger sub-groups consist of the so-called alcoholic psychoses, by which is meant forms of insanity of which alcohol is an *essential cause* and which, independently of intemperance, are not known to occur at all.

The more important of these are *delirium tremens*, *acute hallucinosis*, certain characteristic *delusional states*, the *polyneuritic psychosis*, and *alcoholic dementia*. The first two are acute recoverable conditions which, however, are frequently found to be of a recurrent nature, owing to a strong tendency shown by the patients to return to habits of intemperance after discharge from the hospital. The delusional states are for the most part, chronic, persisting for years, if not permanently, in spite of commitment to a hospital and complete withdrawal of alcohol. The last mentioned two conditions are likewise chronic, being characterized by mental deterioration.

#### IV. RECAPITULATION AND CONCLUSION.

I do not know what impression my address has made upon you. I have been told that Professor Kraepelin has many times lectured against alcohol to gatherings of men in beer halls as they were sitting around the tables, listening to him with a half amused, half cynical air, all the while consuming beer by the liter.

I think, however, all will agree with me that, assuming my very incomplete presentation to be essentially correct, the facts, if we pay heed to them, would lead us away from the saloons and not towards them.

What makes at all possible the existence of the problem of alcoholism is the fact, already mentioned, of its pleasing subjective effects and

of its acting in some respects as a food. Thus, if you will permit me to turn again to an observation of Professor Kraepelin's, one of his patients said, "In my day I have lived on beer and I have lived on whiskey; I never was much of an eater."

It is unfortunately not possible to enjoy the pleasures of intemperance without at the same time undergoing its far more serious ill effects; and as a food alcohol hardly merits consideration; for, what's the matter with oatmeal, Boston baked beans, chicken à la King, layer cake with maple frosting, and so forth, and so on? Anyone who is not satisfied with this and all else that is available in the line of foods, but is bound to derive his nourishment from whiskey or beer, is certainly fussy, to say the least.

What I have told you may be summarized more briefly as follows:

1. Even moderate drinking especially when it becomes a daily habit, though not likely to make anyone insane, is sure to reduce physical and mental efficiency, thus killing the best that is in one as long as it is indulged in.
2. Many persons, who have an inborn predisposition to mental disease, but who, had they abstained from alcohol might have avoided an actual breakdown, have been brought to hospitals for the insane by habits of intemperance.
3. Much larger numbers have been brought to hospitals by the same cause who, we know for certain, would never have developed their insanity were it not for their intemperance.

I would not have you think that I have begun to tell you all about the effects of alcohol; owing to the limited scope of my address, I have not even touched on the part played by alcohol in producing certain physical diseases, such as chronic gastritis, cirrhosis of the liver, and inflammation of the nerves; every insurance company has statistics showing how much higher the mortality rate is among those who drink than among those who abstain; nor have I touched on the relationship which there is between alcoholism and vice, crime, pauperism and other social evils.

Considering this, it is fitting, it seems to me, that I should close not with my own words, but with the more comprehensive and impressive words of Charles Darwin: "Through the long experience of my father and grandfather, extending over a period of more than one hundred years, I have reached the conviction that no other cause has brought about so much suffering, so much disease and misery, as the use of intoxicating beverages."

# CEREBRAL SYPHILIS: A METHOD OF TREATMENT BY PROLONGED INTRA-SPINAL INJECTION OF SERUM UNDER HIGH PRESSURE.

By JAMES B. AYER, M.D., BOSTON.

It has been shown by numerous experiments that injections of moderate amounts of fluid into the spinal canal under normal pressure reach no higher than the medulla. Correspondingly, syphilitic affections of the brain, notably general paresis and optic atrophy, are less influenced by intra-spinal salvarsanized serum than are cord affections. Hence the attempts at cure by intracranial injections of different kinds, as recently recommended by a number of writers.<sup>1, 2, 3</sup> These methods appear reasonable, and in some otherwise refractory cases are undoubtedly effective; but they offer the serious handicap of frequent surgical operation on the cranium, and in the case of intra-ventricular puncture of penetration of brain tissue by the injecting needle as well. Moreover, by placing serum in the fluid channels of the brain at normal pressure we have no right to say that it penetrates the brain substance.

The writer is much impressed with the experiments of Weed<sup>4</sup> in which this author found it possible by means of prolonged spinal injections of potassium ferrocyanide and iron ammonium citrate at pressures above the normal of the spinal fluid to precipitate Prussian blue in the cerebral perivascular spaces and even the capillaries and substance of the brain.

With Weed's experiments in mind, the writer attempted to duplicate his work in man. On four occasions three patients have been subjected to prolonged spinal injection of diarsenolized serum (Swift-Ellis technic) at slowly increasing pressure, with the hope of forcing the serum not only into the cranial cavity but back into the lymph channels of the brain and into the brain substance itself as was the case in the experimental animal. That the first of these requirements was satisfied was assured in two patients in whom craniotomies had been performed, in that *serous fluid, evidently dilutions of the serum injected into the spine, was obtained from the subarachnoid space over the frontal lobes.* Whether the second requirement be fulfilled we can only guess at present; the outcome of treatment as it affects the symptoms and laboratory findings being our index.

The technic employed is as follows: The patient is placed on his stomach, with back arched by a pillow, and lumbar puncture performed. After noting the spinal fluid pressure, all the fluid which will come without suction is taken, the head is then lowered and diarsenolized serum full strength, 20 to 30 c.c. is allowed to run in, and is quickly followed by normal saline. As more saline is given the pressure is found to

gradually increase, but if no attempt at haste is allowed, 150 c.c. or more of fluid may be given without discomfort to the patient or alarming symptoms of any kind. The four injections so far given may be tabulated as follows:

	Sp. fl. press. before	Fluid injected	Time taken	Sp. fl. press. after
*I.	150 mm.	70 c.c. (20 c.c. serum)	45 min.	450 mm.
II.	150 mm.	170 c.c. (25 c.c. serum)	60 min.	550 mm.
III.		100 c.c. (27 c.c. serum)	40 min.	530 mm.
*IV.	190 mm.	100 c.c. (30 c.c. serum)	105 min.	460 mm.

\* After these injections, serum was obtained by puncture of the cranial subarachnoid space over the frontal pole.

It is calculated that the total amount of cerebro-spinal fluid in the body is about 150 c.c. We may, then, conceivably replace this fluid by a spinal injection, though bearing in mind the certainty that some of our injection is constantly being carried away during the process. Nevertheless, some reaches the brain, as clearly shown by our obtaining the same over the frontal lobes, and being obtained at this distant point we may assume that the base is washed by an even greater quantity of serum.

It seems to the writer that the above method of injection of serum, given under high pressure for a long period of time, offers a means of cranial lavage most likely to cause penetration into the brain tissue, and to be much easier of repetition than the various forms of direct intracranial administration. Whether or not the procedure is of value is not the subject of this paper.

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- <sup>3</sup> Gordon, Alfred: J. A. M. A., Oct. 30, 1915, p. 1545.
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## Medical Progress.

### TENTH REPORT OF PROGRESS IN ORTHOPÆDIC SURGERY.\*

By ROBERT B. OSGOOD, M.D., ROBERT SOUTTER, M.D.,  
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#### TUBERCULOSIS.

##### Heliotherapy.

THE entire fifty-first number of the *Korrespondenzblatt* is given up to a discussion of the results to be expected from heliotherapy. Rollier<sup>1</sup> of Leysin, its most active advocate, seems to be quite as enthusiastic as ever, reporting in 198 cases of vertebral caries 171 cured and 18 improved; in 158 cases of hip disease, 125 cured and function restored in 102; in 120 knee cases, 106 cured and 78 with function. He has established a labor colony for the learning of trades, such as wicker work, and a farm colony where the convalescent patients are taught the care of bees and stock and the cultivation of vegetables and flowers. He urges that such institutions be established by the state in connection with heliotherapeutic institutions. He believes that the mountains offer the best climatic conditions.

Schäffer<sup>2</sup> reports that at the Vegelgard Sanitarium in Denmark, sun baths were introduced into the routine treatment of bone and lung tuberculosis as long ago as 1902. Three hundred and sixty-four patients have been given systematic heliotherapy, with gradually increasing exposures up to one hour. No bad effects were noticed except an occasional erythema. These were apparently all lung cases, but no marked improvement was noticed in the majority. Several cases suffering from long standing infections were greatly benefited. The Sanitarium has now introduced artificial "heliotherapy."

Schrotter,<sup>3</sup> another advocate, believes that the length of time of exposure is more important than the intensity of the radiation and that the "cure" can be successfully accomplished at medium altitude and even sea level. In fact, he considers that the climate of the high mountains is often too severe for weakened organisms.

Becker<sup>4</sup> reports on heliotherapy in surgical tuberculosis as carried out in Teheran, where the sun shines for seven months. On account of the intense heat, only the affected parts were exposed. Fifteen of the twenty-five cases progressed to complete cure while under observation.

Kirsch and Gratz<sup>5</sup> have observed that under heliotherapeutic treatment old sinuses begin to heal very rapidly. New sinuses frequently form, but discharge only serous fluid and only for a short time. Pain is greatly relieved.

Hinsdale<sup>6</sup> has reviewed the history of heliotherapy and declares that Madame Duhamel in

1857 brought scrofulous children to the beach in France, bathed their sores in salt water and exposed their naked bodies to the sun.

(Ed. Note.—As we have said before in other Reports of Progress, heliotherapy is a method of treatment which we must employ. Rollier seems to us to have perhaps unnecessarily and unwisely abandoned all operative and certain fixative aids to treatment. Many roads lead to Rome, and the longest way round is by no means always the shortest way home, but the striking fact remains that satisfactory results may be obtained by this method alone in a large number of cases, and while we ought not to give up older and well tested methods of cure, we must be sure that this gift of the gods is utilized.)

Strohmayer<sup>7</sup> in 120 cases treated with Roentgen rays considers the results very satisfactory, particularly from a functional point of view. In fact, he believes that resections will become unnecessary in most cases. He has seen no harm come from the use of the rays.

Oehler<sup>8</sup> also recommends x-ray therapy in surgical tuberculosis, believing that the effect on the smaller joints and more superficial bones is much more favorable than on the deeper ones. He used lightly filtered rays.

Beck<sup>9</sup> has continued his studies with Rosenbach's tuberculin in 45 more cases of tuberculosis, 11 of which were of bone tuberculosis. He is still most favorably impressed by the reduction of the swelling, the closing of the sinuses, and the returning mobility. Hackenbruch<sup>10</sup> believes that the local injections have a more favorable influence than the intravenous. He reports an autopsy on a case apparently cured after several injections, showing no evidence of active tuberculous disease. Of the 81 cases injected, four died. For treatment he recommends monthly intervals between injections. For diagnostic purposes it should be given cautiously and with gradually increasing doses.

Haas<sup>11</sup> has carried out very exact experiments in order to discover whether or not tubercle bacilli are constant inhabitants of the blood of patients suffering with surgical tuberculosis. In eleven out of 24 cases, acid-fixed bacilli were found to be in the blood, but were not recognized as tubercle bacilli. The animal experiments were all negative. Haas does not deny that sometimes tubercle bacilli may be found in the blood, but does not believe that such findings should be of any value in regard to the prognosis.

##### Caries of the Spine.

Janssen<sup>12</sup> in an article on the early diagnosis of tuberculosis of the vertebrae, states that the most important early symptoms are (1) pain after standing; (2) disagreeable sensations in the back, which may be noticed especially in sitting at the table. He believes that any complaint of back pain in individuals who have pre-

\* This report is based on a review of 440 articles selected from about 900 titles having to do with orthopedic surgery, appearing between Nov. 1, 1914 and Jan. 1, 1916. References are given to only such articles as have been selected for note and comment.

viously recovered from pulmonary disease, should be most carefully investigated. He speaks also of the girdle and ilio-inguinal pain of the more advanced stages. Recumbency and heliotherapy with a Hessing corset for a year after apparent cure are his methods of treatment.

Wierzejewski<sup>13</sup> has employed a method of bone grafting in Pott's disease similar to that of Henle and Brackett, using two splints of bone, one on each side of the denuded spinous processes. He avoids thus the trauma of splitting the spinous processes, which he considers likely to favor the further involvement of the vertebral body with disease, and to be very dangerous to the spinal cord if the arches of the vertebrae should be affected. In the early cases he considers Albee's method to be free from danger. He uses the motor saw and believes he thus avoids the danger of fat embolism.

#### *Hip Disease.*

Allison<sup>14</sup> reports 25 cases for consideration as to whether a traction splint or a plaster of Paris cast is the better method. He discusses also whether the best result is ankylosis or motion. He believes it is essential to protect the hip from both weight-bearing and motion in the acute stages, and that this can probably be done only in a plaster cast, high sole, and crutches. During the convalescent stage Allison believes that a traction splint is most satisfactory. He does not think that ankylosis is the best result, and does not agree with Lorenz that the weight-bearing treatment to bring about firm ankylosis is the best method of treatment. He thinks that traction does not materially increase the amount of atrophy, and that it does preserve a certain amount of motion. In those cases treated by an abduction splint a certain amount of motion remained, but in over one-half the cases treated with a plaster of Paris spica, the hip was fixed. The form of treatment had apparently no influence on the development of abscesses. Allison does not state definitely the amount of motion in his cases, or whether in those cases with little motion there developed, perhaps many years afterwards, such painful symptoms as made it necessary to fix the joint by arthrodesis.

(Ed. Note.—There will probably always be found honest differences of opinion as to what constitutes the best functional result in tuberculous coxitis, ankylosis in a good weight-bearing position or varying degrees of motion. It is certainly true that the majority of cases do not obtain anything like normal range in a true tubercular hip disease, but occasionally we see undoubted cases in which the eventual range is so considerable as to be more desirable functionally than complete ankylosis. All of the editors in the light of their clinical experience would prefer, if they themselves or their children had early tubercular disease of the hip joint, to have that treatment administered which would favor eventual motion. All of the editors, if extensive destructive changes were evident, would prefer to have that treatment administered

which would lead to firm ankylosis in a good weight-bearing position. It is fair to take into consideration also that if this more or less mobile hip should be easily strained or show signs of recurrence of this almost malignant disease, an arthrodesis could probably be successfully done later.)

#### *Tuberculosis of the Knee.*

Sever and Fiske<sup>15</sup> have reviewed the results in 638 patients treated at the Children's Hospital in Boston from 1880 to 1910. In 30% there was a history of trauma, in 14% there was a family history of tuberculosis, in 27% abscesses occurred. They found bone involvement most common, but synovial disease not rare. The average duration of treatment was four years and nine months; in the unoperated cases, four years and two months, and in the operated cases, five years and eight months. Considering ankylosis in a good position for function, and cure with motion as good results, there were 65% of satisfactory results and 35% unsatisfactory.

Rogers<sup>16</sup> in a series of cases of tuberculosis of the knee in adults, finds best results from operative treatment, and believes that a diagnosis can often be made only by exploratory incision and examination of the joint. He believes that primary synovial disease is common.

Ely<sup>17</sup> reporting an excellent result of a case of astragalectomy for tuberculosis of the tarsus in a man 25 years old, makes a plea for this trial rather than amputation or extensive resection in disease of the tarsus. He is convinced that conservative treatment is usually unsatisfactory, the intimacy of the various joints making the spread of the disease throughout the tarsus possible. Ely believes that if the joint is destroyed the disease will in time disappear, the bone marrow structure at the site of the operation is changed, the synovial membrane disappears, and tuberculosis can no longer flourish in that locality, though encapsulated tuberculous nodules may persist for years without causing the slightest trouble. "No joint, no lymphoid marrow, and no synovial membrane. No lymphoid marrow and no synovial membrane, no joint tuberculosis. Conclusion.—To cure joint tuberculosis in the adult, destroy the joint!"

#### ARTHRITIS.

Nordmann<sup>18</sup> writing on gonorrheal arthritis, says that he has found no drugs which will offer any material relief. He has found that passive hyperaemia, on the contrary, affords great ease from pain and improves the objective symptoms. It should be employed, he thinks, for twenty out of twenty-four hours, and never tight enough to make the limb below look bluish. Fixation in plaster also relieves the pain in the majority of cases, but may easily be left on too long and result in an ankylosis, one of the most difficult forms to treat. Traction as a last resort is often helpful.

(Ed. Note.—The editors have had the same

experience as Nordmann with passive hyperaemia in gonorrhoeal arthritis. Its pain-relieving action is most satisfactory, and, as Nordmann says, the patients often dislike to have it taken off even for a few hours. We believe a word of caution should be said concerning the great danger of too long continuance of fixation or of any expectant treatment. If the acute condition with high temperature, effusion, and great sensitiveness continues with unabated severity after a trial of one or two weeks of fixation, passive hyperaemia, etc., we advise a small opening into the joint and a thorough washing out with hot (112° F) saline solution or a mild antiseptic and a subsequent immediate tight closure of the capsule. When the gonococci invade the capsule, as they are said to do frequently in the third or fourth week, arthroplasty is the only measure likely to restore normal or painless motion, and even this operation of problematical success must be deferred for many months. The early washing out of the joint may be expected to result in a rapid recovery. We must also remember that in all gonorrhoeal infection the source of the poison must be eradicated. No more remarkable results have been reported than the cures of old and acute joints which have taken place after the drainage of the prostate or the removal of the seminal vesicles.)

Riebe<sup>19</sup> has noted that good results in cases of nonarticular gonorrhoeal arthritis follow the intravenous injection of "arthigon." Improvement was noticed even in old negative cases. There was prompt relief of pain.

Mulzer<sup>20</sup> also has been impressed with the benefit following the use of "arthigon" in gonorrhoeal arthritis, but thinks the intragluteal injections safer than the intravenous, which he feels give too strong a reaction. He does not fix the joints.

(Ed. Note.—Arthigon is a gonococcic vaccine representing an aqueous solution of carefully killed gonococci, made after certain experimental work by Dr. Bruck at Prof. Neisser's Clinic in Breslau. [Sehering.])

Netter and Durand<sup>21</sup> have found a suppurative joint trouble a comparatively frequent complication of cerebrospinal meningitis, second in frequency only to otitis media. It has always terminated favorably in every case, but recovery seemed to be hastened by injection of anti-meningococcus serum directly in the joint. In the last seven years this suppurative arthritis was encountered in eleven of their 200 cases of cerebrospinal meningitis. Various joints were affected, sometimes several at one time. In five cases no microbes could be cultivated from the joint or revealed by the microscope. In this group the arthritis developed later than in the others. In one infant of ten months, meningococci were found in the joints of the foot while the meningitis was at its height. As this meningitis subsided under intraspinal serotherapy, the toe processes subsided also, but subsequently pus accumulated in one ankle. No meningococci

could be cultivated from it, however, and the suppurative process promptly disappeared with a single injection of antimeningococcus serum. In one child one year old, there were eleven separate suppurative processes. In four infants the suppurative processes were in fingers and toes. In two of these purpura was the first sign of anything wrong. The age of the patients ranged from ten months to thirty years. The meningitis terminated fatally in four cases. In addition to the above eleven cases they report the death of a three-months' babe from a primary meningococcus arthritis in the shoulder. The meningi were apparently normal. This meningococcus arthritis resembles very much the primary or secondary arthritis set up by pneumococci. They both are more benign than joint trouble of other origin, but the meningococcus affection has the advantage of having available a specific medication, namely, direct local injection of anti-meningococcus serum. The knee is the joint usually affected, according to Sainton and Maille,<sup>22</sup> who have encountered three cases in the course of well-defined cerebrospinal meningitis and know of seven other cases in a total of 63 cases of the disease. The proportion was thus 15.8%. In addition to the above, they report two cases of arthritis in which the knee trouble was the first sign of the meningococcus infection to attract attention. In both there was first an infectious sore throat, then headache and insomnia, and finally the characteristic arthritis with meningococci in the purulent fluid obtained by puncture. Any arthritis in the course of an epidemic of meningitis should at once arouse suspicion. The meningococcus seems to be capable of generating an actual acute infectious pseudorheumatism.

Strauss,<sup>23</sup> reporting a case, believes that both the so-called Still's disease and Mikulicz's disease are very closely related and are probably due to general chronic infections. In most of the cases he expects to find chronic indurative inflammations of the parotid or submaxillary glands as well as chronic pharyngitis.

Boorstein,<sup>24</sup> in an article on what he terms chronic progressive polyarthritis, discusses the etiology. He is rather inclusive, believing that the onset may be favored by occupation, worry and disturbance of metabolism due to irregularities in the gastro-intestinal tract or the ductless glands. He considers also that the specific cause may be the subacute infections, such as an abscess at the base of a tooth, a tonsil, or a disordered prostate or tube. He is somewhat optimistic in his prognosis, though he regrets the fact that the focus is sought often too late for complete return to normal conditions, the local joint changes having become too permanent. He emphasizes the importance of avoiding routine and instituting a regimen applicable to the individual. Eradication of the focus, correction of the visceroposis by posture, diet, and local treatment consisting of combinations of rest and

exercise, he believes will result in the betterment of most cases.

Davis<sup>25</sup> reviews the usual methods of local treatment of painful, non-tuberculous joints, such as baking, massage, passive motion and fixation, which latter measure he considers is usually inefficient. He believes in absolute fixation, and since there is no generally accepted method of therapy he urges that absolute fixation be given a thorough trial, as a routine in the treatment of painful chronic arthritic conditions.

(Ed. Note.—The author does not discuss the different types of painful chronic arthritis, and if he means to include all the types we must dissent from his views. We agree that absolute fixation will often most quickly and most permanently relieve the chronic hypertrophic, or degenerative or osteoarthritic, type, using these terms synonymously. We do not believe that absolute fixation is indicated in the chronic infectious or atrophic types. In our opinion a combination of partial fixation, only enough, in fact, to relieve pain, and massage, exercise, and hydraemic measures in general are indicated in both these latter types. We should strive rather in these to prevent adhesions and discourage atrophy. Absolute fixation would seem to encourage both these undesirable tendencies. Painter,<sup>26</sup> in an article on the treatment of the convalescent stage of infectious and atrophic arthritis, admirably expresses our convictions on this subject. He says that the first response to an invasion of any joint by bacteria or their products is the reaction in the synovial membranes, modified in its intensity by the virulence of the infectious agent and the response of the local tissues. A definite trauma or occupational irritation must be considered a factor in determining the beginning and extent of the trouble. These inflammatory reactions consist in the engorgement of the local vessels with blood. The effusion of a certain amount of serum and the infiltration of the sub-serous tissue with small round cells, and later the proliferation of connective tissue in response to the toxic irritation. If the invading organism is of a virulent character, there will be much effusion; in a mild type there will be less effusion and more villous hypertrophy. As a result of the effusion there is a tendency to contractures and muscle spasm. Serous surfaces may become eroded and the sub-serous tissues exposed to irritation. In the less virulent infections, where there is no immediate erosion of the serous surfaces, the deformity, which at first is due to muscular spasm, tends to become permanent because of the proliferation of the synovial membrane, which often projects its folds between the joint surfaces and mechanically obstructs the extension. Painter has observed that the earlier and more persistently the patient compelled himself to use certain joints, the more motion they will possess; for instance, the right arm and hand showed a better function, also the thumb and index finger.

The selection of the time to begin motion without running the risk of stirring up the activity of pathological processes is hard to make, but when there is a small arc of motion present, however small it may be, it is desirable to use the joints passively, always trying to increase that motion gradually. Prolonged fixation often does more serious harm than causing adhesions; the function of the joint is necessary for the proper metabolism and nutrition of its tissues.)

Brackett's<sup>27</sup> conclusions as to the operative treatment of "osteoarthritis" of the hip are based on a wide experience. He believes that operation is applicable in cases only where the disease is localized and monarticular, and where it is the remnant of an arrested process. He considers first the localized hypertrophic overgrowths in joints not permanently damaged, and recommends an anterior or antero-lateral incision, through which a large part of the rim of the head of the acetabulum can be explored, and removed if necessary. In purely osteoarthritic cases where there are extensive overgrowths resulting in enlargement of the whole joint structure, there are two operations of choice. (1) Excision of the head of the femur, leaving the acetabulum intact, hoping to gain some motion and relieve the pain. (2) Complete arthrodesis, trying for complete fixation, so that we may make a firm weight-bearing joint. In operating greatest care must be taken to preserve the Y ligament. The most important element in the decision for an operation is the relief of pain, as it is often the chief cause of the disability. The judgment of the value of the operation may often be a success in the relief of this element. It is generally very encouraging to relieve these distressing symptoms, and the relief is most often permanent.

Daniels and McCrudden<sup>28</sup> have tried to determine whether there is any relation between the attacks of gout and the amount of uric acid in the blood, or between such attacks and the amount of uric acid excreted in twenty-four hours. Two cases were very thoroughly studied, and gave typical histories of gout with characteristic x-ray pictures and general symptoms. As far as one can judge from the very careful clinical examination they were cases of true gout, and not atrophic or infectious arthritis. The patients were kept on a practically constant purin-free diet. The authors found no more uric acid in the blood than in normal individuals, and the amount of uric acid in the blood was not altered during the acute attacks with gouty symptoms. Attacks of gout appeared during the administration of atophan, when, as is shown by chemical analysis, the uric acid content of the blood had been greatly decreased. Many observers have found much advantage in the use of atophan in preventing the severe attacks of gout, and the relative increase in uric acid in the blood has been shown to be present in individuals under normal diet, either previous to or during the

acute attacks of gout. It is true, however, that as yet our methods of careful quantitative examination of the amount of uric acid in the blood are not fully reliable. They admit that there seems to be some definite causative relation between the presence of the uric acid and the severity of the symptoms.

#### *The Occurrence of Arthritis in the Field.*

Chaput,<sup>29</sup> striving to better the treatment of the distressing and serious cases of purulent arthritis resulting frequently from bullet and shell wounds, discusses the appropriate treatment for each of the large joints, describing the special syndrome and the indications for operative intervention and the various steps if intervention is determined upon.

(Ed. Note.—The impression which we have gained from an experience with these wounds leads us to advise conservatism rather than radicalism in their treatment. We are accustomed to think of the joint surfaces as very susceptible to infection and we know, of course, the dire consequences which often follow severe infections of joints. Cotton<sup>30</sup> has recently suggested, as did Goldthwait many years ago, that possibly we have underrated the resistance of joint tissues to even very considerable infections. His series of cases show almost constantly good results from a thorough, prolonged washing out of the infected joint with weak antiseptic solution through comparatively small linear incisions, and the sewing up tight of the joint capsule, leaving a small drain through the periarticular tissues and skin. Many cases which we have observed of infected joints caused by bullet or shell wounds, provided the infection had not existed for too long a time, progressed to a complete recovery after a thorough washing out and a cleaning of the adjacent tissue, with only a small rubber tissue wick for drainage left down to the joint-opening and removed in a few days. Joints drained more radically and for a longer period nearly all become stiff. Joint motion is a stake well worth playing for and the risk of life or even of amputation is not a serious one with careful watching.)

Both Schmidt<sup>31</sup> and Freund<sup>32</sup> have observed numerous cases of arthritis, myalgia, neuralgia, etc., among soldiers. Both of them in many cases found either present foci of infection or histories of similar attacks of which these were exacerbations. Freund has seen some cases of true neuritis even with paralysis, disturbances of sensation and nutrition. Freund has also observed many cases exhibiting a fairly constant symptom complex. This consists of severe tenderness of the muscles and periosteum, marked over their insertions and over the joints. The lower extremities are most commonly affected, especially the tibia. There are never any signs of an exudative or infiltrative process. Spontaneous pains are common. The motion is often limited and the tendons feel too short. The gait is typical. The general health did not seem to be affected and the temperature was normal.

The course was chronic and there was no improvement under salicylates. All these patients had been exposed to wet and cold and in some of the cases congelations of the first, second, and third degree were present. Freund does not explain the condition from a pathological or anatomical point of view, but believes that probably the motor apparatus had been damaged by the cold.

Michelsen<sup>33</sup> and Nieber<sup>34</sup> each report one case and Brandes<sup>35</sup> reports ten cases of juvenile deforming osteochondritis of the hip joint, with Roentgen ray findings. All the authors reach about the same conclusions as to the nature of this usually benign disease. Brandes suggests that the cases of supposed tuberculous hip joint disease with recovery may have represented this type of trouble. He reports that a "walking" plaster cast applied for two to seven months may materially improve the condition.

Heineck<sup>36</sup> contributes a valuable review and analysis of all the English, French, and German reported cases of joint bodies (mice) found in articulations otherwise normal. Of the 303 cases, 262 were males, 250 were of the knee joint, and 41 of the elbow. The symptoms were pain, tenderness, effusion, disability (crepitus?), and locking. He considers operation and removal of the foreign body to be the only rational and radical method of dealing with the situation.

Mischowitz<sup>37</sup> attempts to explain the pathology of the calcification of the supra- and infraspinatus tendons in certain cases of subacromial bursitis, but fails to some extent in the attempt. He offers no satisfactory explanation.

(Ed. Note.—We have been much surprised to find how frequently these apparent lime deposits in the floor of the bursa disappear without known cause, and often in a few weeks or months. The nature of these is not quite clear, but it would seem as if they did not require quite as grave a prognosis as we had been giving them.)

Brickner<sup>38</sup> believes that it is difficult to demonstrate, in the Roentgen ray, thickening in the subacromial bursa. He considers that most lesions of this bursa are not a result of a toxic inflammation but probably due to traumatism between the acromion and the greater tuberosity. Operation he considers unnecessary except in old long-standing cases that nothing else relieves.

(Ed. Note.—While trauma may well be an essential factor in many cases, we are quite certain that subacromial bursitis occurs without discoverable trauma and as a concomitant or as a sequela of infections. We agree with Brickner that operation is not usually necessary except in old long-standing cases.)

#### PARALYSIS, CEREBRAL. POLIOMYELITIS.

Mayer<sup>39</sup> emphasizes the importance of orthopaedic treatment and mechanotherapy after a

cerebral hemiplegia. The deformities should not be allowed to persist.

(Ed. Note.—Our experience leads us to urge with Mayer that more attention be paid to these conditions. Much can be done by muscle training and stretchings and occasionally by operations and apparatus to correct the distressing deformities. It is by no means certain that other attacks will occur. Often these patients live many years without any recurrence, active in mind and capable, with help, of being active in body as well.)

Bartow<sup>40</sup> is still enthusiastic over the use of his intra-articular silk ligaments in the reinforcement of paralytic flail joints. About 150 cases are reported.

Gallie<sup>41</sup> reports his observations on 100 cases of tendon fixation which had been operated upon by the methods he has described and which have been discussed in previous "Reports of Progress." He considers the operation most applicable to cases resulting from paralysis of the peronei and to cases of calcaneus resulting from paralysis of the calf muscles. If it is uncertain whether a muscle is completely and permanently paralyzed and there is a chance for at least a partial recovery, Gallie buries only one-half of the tendon in his bone groove, and sewing up the sheath around the other half allows it to functionate if it will. All of the 100 cases healed by primary union and all but two have been decidedly improved. These two cases improved after a second operation. The author believes that this operation should be considered in a great many cases where arthrodesis has been suggested.

Marshall and Osgood<sup>42</sup> were able to obtain the end-results of some 26 operations performed by different orthopaedic surgeons at the Massachusetts General Hospital for the correction of foot deformities resulting from poliomyelitis. No case operated upon less than two years previously was included and most of the cases were adults. The results of seven astragalectomies with displacement of the foot backward were excellent in four cases and bad in only one. Arthrodesis was successful in three cases. The tendon lengthenings and stretchings all showed good results. The tendon transplantations showed better results than the authors expected to find. There was no evidence in their series of over correction of the deformity. The weakest point in the treatment seemed to be the after care, which was often neglected. Considering the fact that different surgeons operated upon these cases and that many of the patients were unable to carry out after treatment, they consider the results in this small series justify the operative procedures.

(Ed. Note.—The editors from their clinical experience believe that in paralytic flail feet the operation of arthrodesis cannot be depended upon, especially in children, to give a good functional result, whereas from astragalectomy (Whitman), with displacement of the foot back-

ward, excellent functional results, including lateral stability, may be expected.)

#### RICKETS. SECONDARY HYPERTROPHIC OSTEO-ARTHROPATHY. OSTEITIS DEFORMANS.

Schloss and Frank<sup>43</sup> have made many (six) contributions to the literature of rickets, dealing chiefly with methods of treatment. They strongly advocate the use of cod liver oil and calcium phosphate, and the experiments described in the article which we are reporting were designed to demonstrate that the good effects obtained, tended to be permanent. There were 78 of these experiments, and the results of treatment were determined by a study of the metabolism. They conclude that this medication in both the early and the late stages brings about marked improvement in the calcium and phosphorus balance and maintains its efficiency over long periods. Clinically the bones become harder. The prescription which they employ calls for 10 gm. calcii phosphoric. tribasic puriss. in 100 gm. ol. jecor. asell. The dose is 5 mg. twice a day, shaking the bottle before using.

Locke<sup>44</sup> from his observation of a series of cases extending over many years and from a complete review of the literature, concludes that while the processes underlying simple club fingers and the changes in the terminal phalanges in the cases of the so-called pulmonary arthropathy may vary, the changes in the fingers themselves are the same, differing only in degree. Locke believes that these clubbed fingers indicate some disturbance in metabolism caused by a pathological process.

Gaenslen<sup>45</sup> believes that focal infections, e.g., teeth, may be the cause of the changes in osteitis deformans. Among 65 cases reported in the literature Gaenslen finds a frequent history of rheumatism and many chronic focal infections, 11 times in the teeth. In one case which he studied very carefully and in which he was led to believe the teeth were the most important factor, he administered "emetin" for ten days, with great relief of the symptoms.

#### OSTEOMYELITIS AND SYPHILIS.

Clopton<sup>46</sup> advocates radical treatment and thorough drainage in cases of osteomyelitis. He deprecates the use of gauze wicks and advises rubber tubes or rubber tissue. When sequestra have been removed he does not believe in curing or the use of too strong antiseptics. In the very chronic localized cavities where all the bone detritus can be removed he believes that bone wax is especially valuable. He thinks this is probably a better method than allowing a blood clot to form.

Simmons<sup>47</sup> has analyzed 82 cases of the acute type of osteomyelitis and finds that 70% are in persons under fifteen years of age. If the diagnosis is made at once and the bone operated upon immediately the outlook is good. When in the child there is recurrence of pain in a limb and a general toxæmia, osteomyelitis should always be suspected and an early operation per-

formed even if the symptoms are rather vague. The danger of the operation, even if a wrong diagnosis has been made, is less than the danger of waiting in a suspected case. In the chronic cases with bone abscess Simmons believes in a very radical operation. This belief is held also by Ochsner,<sup>48</sup> who, while not going so far as Nichols<sup>49</sup> and removing the entire shaft, thinks that multiple sinuses and generally poor results are obtained where there is little bone removed and free drainage is not established. He urges radical and extensive removal of the chronically diseased bone.

#### *Syphilis.*

Nichols<sup>49</sup> has reached the conclusion that as a method of diagnosis in syphilis of the bones, the Roentgen ray is usually reliable. The congenital lesions are periosteal overgrowths or endosteal gummata, and they appear usually near the epiphyseal line.

Coffield<sup>50</sup> maintains that all cases of chronic synovial effusion not yielding to usual treatment should arouse suspicion of luetic disease. The cases of simple arthralgia with or without a slight effusion are also suspicious and the blood tests should be made. A more definite group in which the lesions are tertiary includes those cases in which small gummata may be present in the synovial membrane near the points of ligamentous attachment. Ulceration and thickening of the capsule are later stages. Coffield believes that it is only a step from this gummatous involvement to the osteoarthropathy of a Charcot's joint. In the congenital cases he has been disappointed in the use of salvarsan, but obtained good results from the use of mercury and the iodides.

(Ed. Note.—Various articles have appeared in the last few years written by careful observers and maintaining that in their respective clinics the percentage of luetic joint cases was very high. After each of these reports we have sought to confirm these findings in our own clinics, but while occasional unsuspected cases have been proved to be luetic and an occasional diagnosis of tuberculosis has been changed to syphilis, we think it is fair to say that no very large number of syphilitic joint lesions have been discovered. Perhaps our observation has been faulty; perhaps also this community is fortunate in having a low percentage of lues, but we should certainly be very sure of our data before making this diagnosis, which rightly or wrongly carries with it a stigma capable of producing great unhappiness and distress to the patient, to say nothing of inefficient treatment if perchance the condition is after all tuberculosis and not syphilis.)

(To be continued.)

### **Book Reviews.**

*A Text-Book of Physiology for Medical Students and Physicians.* By WILLIAM H. HOW-

ELL, Ph.D., M.D., Professor of Physiology, Johns Hopkins University, Baltimore. Sixth edition thoroughly revised. Octavo of 1043 pages, 305 illustrations. Philadelphia and London: W. B. Saunders Company. 1915.

The two years that have elapsed since the fifth edition of this admirable text-book appeared have been years of great activity in physiological laboratories, and a large body of observations of more or less importance has accumulated. The point of view of those who attempt to interpret physiology must be adjusted constantly with reference to new facts as they appear. In the case of a science like physiology which has a fundamental relationship to medicine, it is of utmost importance that new facts and new interpretations be made available for teachers and students as early as possible. Herein lies the justification for the frequent revisions of text-books of physiology for medical students.

The new edition of Howell reports the significant new facts and reflects accurately the important changes of interpretation of the past two years. In minor points, also, care has been taken to include the most recent information. Specially worthy of note are the sections on the energetics of muscular contraction; on nutrition, and on the ductless glands; each of which has been largely rewritten, with the result that they are even more satisfactorily handled than in the excellent treatments of the same subjects in previous editions. The book well merits the commanding place it has attained in medical teaching in America.

#### *The American Illustrated Medical Dictionary.*

A new and Complete Dictionary of the terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology and Medical Biography, with the Pronunciation, Derivation and Definition, including much Collateral Information of an Encyclopedic Character. By W. A. NEWMAN DORLAND, A.M., M.D., F.A.C.S. Eighth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Co. 1915.

The seventh edition of this standard American medical dictionary was reviewed in the issue of the JOURNAL for May 14, 1914, (Vol. clxx, p. 766.) This eighth edition has been thoroughly revised, with the addition of several hundred new terms and the increase of the text matter from 1107 to 1137 pages. The material added includes a large number of new tests with new and elaborate tables of the arteries, muscles, nerves, veins, bacteria, ptomaines, leucamines, weights and measures, diseases, operations, signs and symptoms, stains and methods of treatment. The illustrations are excellent and include several full page colored plates. The editor is to be commended for retaining the Greek characters in the descriptive etymology of words.

## THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery, published weekly, under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, APRIL 27, 1916

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## THE WORKMEN'S COMPENSATION ACT.

### A NEW PHASE.

A RECENT decision of the Massachusetts Supreme Court of interest to the medical profession, is recorded in another column. A workman, named Jerry Pecott, in the Arlington Mills, Lawrence, developed a hernia, because of heavy lifting, shortly before closing time on Saturday, October 31, 1914. Disregarding the signs displayed in the room where he was employed, setting forth that two physicians were engaged to attend injured employees and that the bills of no other physicians would be paid, and stating later that he did not know of these rules, Pecott went home and sent for his own physician, being in considerable pain. The following Monday he tried to telephone to his foreman in the mill, but was unsuccessful in talking with him. He, however, left word at the mill office that he had received an injury and was going to be operated on, by the advice of his

physician, who feared strangulation of the hernia. On the succeeding Wednesday the operation was performed by his doctor successfully, and in the course of time a bill for \$65 was rendered. As the insurance company which insured the mill disputed the bill, the matter was referred to a committee of arbitration, which reduced the bill to \$50, the customary schedule fee for such operations, and ordered the bill paid. The Industrial Accident Board unanimously affirmed the decision of the committee, taking the ground that under the terms of the compensation act there was a justifiable cause for the injured employee calling his own physician to treat him for an acute, painful and dangerous condition; that the mill being shut down on Saturday afternoon, he could not communicate with the authorities, and furthermore, he did not know that skilful physicians were provided by the mill to give necessary treatment; therefore the insurance company should pay the doctor's bill.

The insurance company appealed from this decision to the Supreme Court, which reversed the decree of the Accident Board because the court held that the employee, who could read, should have known of the import of the signs in the mill; that he made no effort to secure the services of the mill physicians; that the right to select the attending physician is given to the insurance company by the statute, and the court thought that the legislature, in passing the act, did not intend to give the employee the privilege or right of selecting his own physician at the expense of the insurer, and that, under the amendment of the act, passed in 1914, where a physician other than the one provided is called in a case of emergency, or for other justifiable cause, and the insurer is required to pay for his services, the evidence had not shown that in Pecott's case there was an emergency or that any cause had been shown that would justify a reasonable man in neglecting to seek the services of one of the physicians named by the mill.

Therefore it was for the employee or for no one to pay the doctor's bill in this case. The quality of the service or the competency of the physicians did not come in question, as all three were Fellows of the Massachusetts Medical Society, and the result of the operation was satisfactory. The court decision will have the result of making independent physicians cautious about rendering similar service to employees of corporations which carry this sort of insurance.

## MASSACHUSETTS MILK LEGISLATION.

THE perennial subject of milk legislation in Massachusetts is now again before the General Court and the medical profession for consideration. For a number of years attempts to settle satisfactorily the problem of the production, transportation and distribution of a safe and reliable milk supply have been made in the legislature and a series of bills aiming to accomplish this end have been discussed editorially in the JOURNAL. For various reasons all these measures have successively failed of enactment, and the control of the milk situation in Massachusetts, though by no means seriously at fault, has continued unsatisfactory.

The latest of these abortive legislative attempts to regulate the milk supply was the so-called labor clean milk bill, whose passage was strongly advocated last year by the JOURNAL and by the Massachusetts Medical Society. This bill, whose text was published in the issue of the JOURNAL for February 25, 1915 (Vol. clxxii, p. 308), was passed by the General Court, but was unfortunately and unwarrantedly vetoed by the Governor, presumably for political reasons. On May 21, 1915, this veto was sustained in the Senate by an almost strictly party vote. Governor Walsh's veto message was published in part in the issue of the JOURNAL for May 27, 1915 (Vol. clxxii, p. 799), and in the same issue of the JOURNAL (p. 794) we commented editorially upon this unfortunate catastrophe to a piece of excellent legislation that had been almost brought to fruition.

Following this latest failure to secure the legislative authorization necessary to enable it adequately to control the milk situation, the Massachusetts State Department of Health appointed a milk board consisting of Dr. Eugene R. Kelley, director of the division of communicable diseases; Mr. Herman C. Lythgoe, director of the division of food and drugs; Mr. Edward H. Williams, of the engineering division; and Dr. J. E. Lamoureux, of the public health council. After an eight months' investigation of the entire subject, this board presented, in February, 1916, an extensive report, the conclusions of which are published in another column of this issue of the JOURNAL. Upon this report has been based a new bill, relative to the inspection of milk, drafted at a conference consisting of the legislative committee of the Massachusetts Association of Boards of Health, representatives of the local

boards of health and representatives of the Massachusetts State Department of Health. This new bill, whose text is also published in full in another column of this issue of the JOURNAL, has the approval of the committee of the State Grange, and is now submitted to the legislature by the State Department of Health as a substitute for another bill which it had previously submitted earlier in the season.

The report of the Massachusetts Milk Board above referred to pointed out that the present statutes dealing with the milk problem have resulted in an over-lapping and at times contradictory system of dairy inspection by state and local authorities, with the result that dairymen and milk dealers have been subjected simultaneously to conflicting regulations. The Boston Health Department has felt that Boston is unjustly obliged to carry on the dairy inspections for many other cities and towns in the metropolitan district. On the whole, the milk board believes that the sanitary condition of dairies in Massachusetts is satisfactory, but that the condition of dairies in Maine, New Hampshire and Vermont is somewhat below that standard. As a matter of fact, only 43% of the inhabitants of Massachusetts have an adequate protection of their milk supply, and about 20% of the total population now receives no milk protection from local boards of health. The Massachusetts Milk Board regards the New York system of grading milk as highly satisfactory, and believes that its introduction in some form into Massachusetts would be beneficial.

The present bill, favored by the Massachusetts State Department of Health, based on the report of the milk board, aims to centralize the sanitary supervision of milk in the hands of the state health department, laying more emphasis on inspection of the product itself than on the premises where it is produced. It provides uniform rules and regulations relative to the production, pasteurization and distribution of milk, but does not prevent local boards of health from making further regulations of their own.

In a statement issued in connection with the filing of the bill, the Massachusetts State Department of Health comments upon it as follows:

"The bill provides that milk dealers must annually, on and after June 1, 1917, obtain a permit from the State Department of Health, the permit to be issued after an inspection of the premises of the dealer and, if desired, of the different producers, but, in addition, an inspec-

tion must be made of the milk intended for sale. It is intended, in contradistinction to the present system of dairy inspection, to lay more emphasis upon the product than upon the premises. All dealers are required to furnish the names of all persons from whom they obtain milk.

"The State Department of Health, after public hearings, may make rules and regulations relative to the sanitary control of milk, relative to bacterial content before and after pasteurizing, and relative to the grading of milk. These rules and regulations do not become operative until they have been approved by the governor and council.

"The grading system is defined, and is in substance similar to that of New York City. Its operation will be gradual, however, and will be so regulated that six years will elapse before it is in force throughout the entire state. It is proposed to begin the operation of the system on December 1, 1917, in cities of more than 75,000 inhabitants.

"The bill permits the State Department of Health to prohibit the sale of milk which is liable to cause disease, and the department is authorized to recompense a producer of milk for pecuniary loss under these sections if he first notifies the department of the existence upon his premises of a disease capable of transmission through milk."

This bill was introduced into the legislature by Senator Clark of Plymouth, and will probably be known by his name. The first hearing upon it was held at the State House on Tuesday, March 28, before a joint session of the committees of agriculture and public health. Further hearings will doubtless be held. The attention of members of the medical profession is earnestly directed to this important measure, whose passage is strongly approved by the JOURNAL, and should go far towards establishing the control of the milk supply in Massachusetts upon a secure and satisfactory basis.

On April 4 a second hearing was held on the Clark bill, at which a number of opponents, as well as advocates of the measure, were heard. Alternative measures were presented by Representatives Leary and Pratt.

The Leary bill is based on the Clark bill as a framework, but provides for a new commission for the purpose of drafting rules and regulations for the control of the milk industry. The commission, it is provided, should be composed as follows:

"The State Department of Health, the Health Commissioner of Boston, the chairman of the Board of Health of Worcester, the chairman of

the Board of Health of Fall River, the chairman of the Board of Health of Springfield, the agent of the Dairy Bureau of the Massachusetts Board of Agriculture, the President of the Massachusetts Milk Inspectors' Association, a member of the executive committee of the State Grange of Massachusetts, sitting jointly, shall, with the approval of the Governor and Council, frame reasonable rules and regulations, not inconsistent with law, relative to the sanitary conditions of the production, transportation, care, handling, storage, pasteurization, grading and distribution of milk."

The Pratt bill (House No. 1478) embodies local self-control of the milk situation, and provides for grading of the milk product. It does not, however, provide adequately for the inspection of out-of-state milk.

It seems that there is no question of the preferability of the Clark bill as approved by the State Health Commission, to all of these alternative measures. Unfortunately, at the joint executive session of the Committees on Public Health and Agriculture, on April 11, it was voted by a majority of the members to recommend that the proponents of all three bills be given leave to withdraw. If this committee report is accepted by the legislature, there will, therefore, probably be no milk legislation at the present session of the Massachusetts General Court.

#### STANDARDIZATION OF TUBERCULOSIS TREATMENT.

THERE are at present pending before the National Congress several proposed measures looking toward the standardization of the treatment of tuberculosis in the United States and toward the elimination of the evil of the assisted migration of indigent tuberculous patients. In the issue of the JOURNAL for February 3, 1915, we commented editorially on one of these bills, introduced by a congressman from Massachusetts. An alternative measure has been introduced into the Senate, and another, similar to it (H. R. 8352) has been introduced into the House of Representatives by Congressman Kent of California. The text of this Kent bill is as follows:

"Section 1. That within the appropriations made from time to time for such purposes, the secretary of the treasury is hereby authorized to aid state authorities in providing care and treatment for indigent tuberculous persons who are

citizens of the United States, but not legal residents of the states in which they are temporarily located, and for this purpose may designate such public or private hospitals and sanatoria as may be necessary. Prior to being designated to receive patients, and from time to time, said institutions shall be subject to inspection by officers of the Public Health Service in order to determine the facilities and methods available and in use for care and treatment of patients, and the secretary of the treasury is further authorized to prescribe standards, to which institutions shall conform in order to obtain the benefits of this act.

"Sect. 2. That hospitals and sanatoria designated in accordance with the provisions of this act shall be entitled to and may receive from the federal treasury a subvention fixed annually by the secretary of the treasury, but not exceeding 75 cents per diem for each indigent patient admitted with the approval of the secretary of the treasury: provided, that the state in which said indigent tuberculous patient is admitted to a hospital or sanatorium for treatment shall pay, or cause to be paid, a subvention, not less than that paid by the federal government, toward the cost of caring for such patient in said hospital or sanatorium. Subventions under this law will be granted only in the case of indigent patients who have submitted satisfactory evidence that they were not assisted by any person or institution to leave their legal residence or did not themselves leave in order to receive benefits under this act.

"Sect. 3. That the secretary of the treasury is authorized to issue regulations governing the designation of institutions and establishment of standards and for otherwise carrying out the provisions of this act; and he is further authorized to collect and make available for general use information and descriptive matter relative to the construction, equipment, and maintenance of hospitals, sanatoria, and similar institutions.

"Sect. 4. That detailed estimates of the sums required annually to carry out the provisions of this act shall be submitted hereafter in the usual book of estimates."

In a circular letter, addressed to the medical profession of the United States, the author of the bill writes as follows of its purposes:

"This bill is the result of careful study and consultation, not only with the leading medical men, but also with the secretary of the treasury and the surgeon-general, Dr. Rupert Blue. The provisions are simple and obvious. One object of the bill is to standardize the treatment of tuberculosis by means of federal assistance, with the voluntary coöperation of the states. No one in the medical profession can doubt the wisdom of preventing the migration of indigent victims of tuberculosis, another object worthy of accomplishment. This migration is a hideous cruelty, and is contrary to all recent developments of medical science as applied to this disease. It is

universally recognized that, granted good outdoor air, rest, suitable nourishment, and cheerful surroundings, there is little choice in the matter of climate.

"The theory that climate, unaided by nutrition, rest, and calmness of spirit, will cure this disease causes a continuing migration of physical and financial wrecks to regions where they are friendless and without possibility of employment or support, so that they become stranded, under conditions that must necessarily lead to neglect, depression, and resultant death. Moreover, these victims are frequently placed in public institutions, which are unable to give proper treatment.

"Wherever such neglected cases are found, there are present most dangerous sources of infection. We do not permit the transportation of victims of smallpox, except under most careful conditions, and yet we have been oblivious of our duty to prevent the dissemination of this commonest and most serious of all human maladies.

"The Federal Government can well afford to make the small contribution suggested toward the relief of the great class of citizens who would be benefited by this bill, for it is now recognized that tuberculosis is peculiarly a disease of poverty and malnutrition, the control and eradication of which is in the province of the federal health service.

"You will note that by the terms of the bill it is optional whether the states accept the law and coöperate with the federal government, which obviates any criticism based on supposed federal interference with the functions or rights of the states. You will also note that the states may pay, or cause to be paid, an amount at least equal to that to be contributed by the federal government. This means that any state tendering its coöperation can pay its proportion either directly from the state treasury or from any other source that it may levy upon, and that the state shall be responsible for the payment of the fund to any agency which it may authorize, whether state, county, municipality, or private institution.

"The bill is purposely free from technicalities, in order that latitude may be granted for the establishment of rules by the surgeon-general. There is no medical man in the nation that more deservedly enjoys the confidence of our citizens. His record in fighting the bubonic plague in San Francisco and his subsequent career has fitted him to a remarkable degree for inaugurating this great work.

"If you believe in the purpose of the bill and desire its enactment into law, I would respectfully suggest that you forward your indorsement of it to the senators from your state and to your representatives in Congress. I would greatly esteem a statement of your views."

As we pointed out in our previous editorial, we are not disposed in theory to approve of the

principle of subsidy involved in this bill; but in practice it has seemed to work well, and without justice, under comparable conditions in this community. It aims not merely to standardize the treatment of tuberculosis in the United States, but to provide federal aid in caring for tuberculous indigents. The bill was drawn in coöperation with Dr. Philip King Brown of San Francisco, and has been approved by Mr. Henry Phipps, founder of Phipps Institute, by the late Dr. Henry B. Faville of Chicago, and by several prominent Boston physicians. The attention of our readers is called to this important piece of proposed legislation, and they are urged, if their opinions concur in favoring the measure, to communicate upon the subject with their representatives in Congress.

#### MEDICAL NOTES.

**AMERICAN PEDIATRIC SOCIETY.**—The twenty-eighth annual meeting of the American Pediatric Society is to be held at Washington, D. C., on May 8, 9 and 10, in conjunction with the Congress of American Physicians and Surgeons. The preliminary program of the sessions on May 8 includes papers by Dr. Richard M. Smith on "The Mode of Infection in Pylitis in Infancy" and by Dr. Maynard Ladd on "Homogenized Olive Oil Mixtures." At the morning session on May 9 Dr. John Lovett Morse will present a study of the etiology of chorea. The afternoon session of May 9 will be devoted to a symposium on syphilis, with papers by Dr. John A. Fordyce and Dr. Homer B. Swift of New York and Dr. Hugh Cabot of Boston. At the evening session on May 9, the presidential address will be delivered by Dr. W. S. Thayer of Baltimore. The afternoon session on May 10 will be devoted to a symposium on immunization and its practical applications, with papers by Dr. Theobald Smith of Princeton, Dr. Ludwig Hektoen of Chicago and Dr. William H. Park of New York.

**ARMY MEDICAL MUSEUM.**—The following request has been received from the office of the Surgeon-General:

"The Army Medical Museum possesses a valuable collection of medals relating to medicine, which was started and fostered by the late Dr. John S. Billings, and it is highly desirable that this collection should be added to and completed, as far as possible. To this end, the assistance and advice of physicians who are collectors of medical medals is respectfully solicited. The museum appropriations will avail to purchase individual medals which are not in our collections, the purchase of private collections, or of individual items in them, will be carefully

considered, private donations of separate medals or groups of medals will be most welcome and will be duly credited to the donors, and the transmission of catalogues of medals for sale is requested. If physician-collectors will bring this notice to the attention of antiquarian establishments having medals for sale, the favor will be most highly appreciated."

#### EUROPEAN WAR NOTES.

**AMERICAN HOSPITALS IN GERMANY.**—Report from New York on March 31 states that Dr. Arthur von Briesen, chairman of the American Physicians' Expedition Committee, has recently received from the United States Embassy in Berlin a letter expressing the praise and approval of the German government for the two hospitals established and maintained in Germany by the committee during the war. Arrangements have been made by the German government to establish a third American hospital, which is to be in charge of Dr. H. M. Richter of Chicago. The committee has already sent to Germany three units of surgeons and nurses, who are at present caring for nearly one thousand wounded soldiers.

**WAR RELIEF FUNDS.**—On April 22 the totals of the principal New England relief funds for the European War reached the following amounts:

Red Cross Fund .....	\$145,360.70
Jewish Fund .....	137,186.63
Belgian Fund .....	114,198.30
Serbian Fund .....	85,696.04
Allied Fund .....	83,877.15
French Wounded Fund .....	70,948.36
French Orphanage Fund .....	39,160.77
Armenian Fund .....	36,777.39
Polish Fund .....	29,644.06
Surgical Dressings Fund .....	23,687.17
LaFayette Fund .....	19,700.53
Italian Fund .....	17,066.81
P. S. D. Fund .....	8,113.83
Cardinal Mercier Fund .....	4,258.00
Lithuanian Fund .....	2,192.74
Scottish Hospitals Fund .....	1,163.80

#### BOSTON AND NEW ENGLAND.

**THE WEEK'S DEATH RATE IN BOSTON.**—During the week ending April 22, 1916, there were 234 deaths reported, with a rate of 16.05 per 1000 population, as compared with 270 and a rate of 18.81 for the corresponding week of last year. There were 35 deaths under 1 year, as compared with 48 last year, and 66 deaths over 60 years of age, against 84 last year.

During the week the number of cases of principal reportable diseases were: Diphtheria, 71; scarlet fever, 42; measles, 165; whooping cough, 24; typhoid fever, 0; tuberculosis, 50.

Included in the above were the following cases of non-residents: Diphtheria, 4; scarlet fever, 7; measles, 1.

Total deaths from these diseases were: Diphtheria, 4; measles, 3; whooping cough, 1; tuberculosis, 31.

Included in the above were the following deaths of non-residents: Diphtheria, 1; tuberculosis, 4.

**RHODE ISLAND SOCIETY FOR MENTAL HYGIENE.**—The Rhode Island Society for Mental Hygiene was organized and incorporated March 21, 1916. Its aims and purposes are to work for the conservation of mental health; to assist in raising the standards of care and treatment for those individuals who suffer from or are in the danger of developing a mental disorder; to study and assist in the proper care of the delinquent child, one of the most important social and humanitarian problems; to promote the study of feeble-mindedness, epilepsy and inebriety; and to distribute knowledge concerning the causes, the treatment and prevention.

The officers are: President, Rathbone Gardner; vice-presidents, Pres. W. H. P. Faunce, R. H. I. Goddard, Jr.; treasurer, Zechariah Chafee; executive committee, Dr. G. Alder Blumer, Dr. A. H. Harrington, Dr. Charles A. McDonald, Dr. Arthur H. Ruggles, Prof. James Q. Dealey, Judge Howard P. Gorham; secretary, Frederic J. Farnell.

**SALE OF THE ACADEMY OF MEDICINE, SPRINGFIELD, MASS.**—The Academy of Medicine and property at 359 State Street, have been sold to Dr. F. C. Brigham. The disposal of this property has been thought advisable for some time by the Academy members. The estate furnished considerable property that was not of use to the Academy, and that fact, together with troubles in caring for the property and the expense of upkeep, decided the directors to make this move. They plan to lease suitable quarters in some new building in the central section of the city, and by saving the incidental costs of keeping up such a large estate, it is thought that the Academy will have a large fund to spend for educational purposes. The officers elected for the coming year are as follows: president, Dr. H. W. Van Allen; first vice-president, Dr. A. O. Squier; second vice-president, Dr. H. L. Smith; secretary, Dr. L. D. Chapin; treasurer, Dr. Allen G. Rice. Directors elected for five years are Dr. J. B. Comins and Dr. R. B. Ober; censor for five years, Dr. H. C. Martin.

**MEDICAL MEETING AT MONSON STATE HOSPITAL.**—The Monson State Hospital, at Palmer, Mass., has extended to all physicians an invitation to attend a meeting on May 4, to review the twenty years' work of this hospital. The forenoon session will be devoted to matters of general consideration, inspection of various departments, exhibits and demonstrations. Luncheon will be served at 1.30 p.m. At the afternoon session Dr. H. R. Stedman will speak on the founding of the Monson State Hospital. Dr.

E. E. Southard will give a summary of researches in epilepsy, an account of the whole brain sections made, a study of the brain of an educated deaf mute, and a general account of the work done at this hospital under his department as state pathologist. Other papers will be read by:

Dr. W. G. Chase on an account of the moving picture work done at the Hospital.

Dr. G. A. Moore, Palmer, Mass., on eye work at Monson State Hospital.

Dr. C. W. Page, Hartford, Conn., on "The Medical Value of Optimism."

Dr. L. B. Alford, St. Louis, Mo., "An Etiological Study of a Series of Epileptics."

Dr. Annie E. Taft, "Appearances of the Corpus Callosum in Unilateral Brain Atrophy," with photograph demonstrations.

Dr. Everett Flood, Superintendent of the Hospital, will give a review of the library.

Dr. M. B. Hodskins, Assistant Superintendent, will speak on "Body Types in Epileptics."

Dr. R. A. Greene, Senior Assistant Physician, on "Forms of Epileptic Insanity So Far Observed at the Monson State Hospital."

Dr. D. A. Thom, Pathologist, and Dr. E. S. Bundy, Assistant Physician, on "Epileptic Dementia."

#### TO BE READ BY TITLE.

Surgical Work at the Monson State Hospital, by Dr. Walter R. Weiser, Springfield, Mass.

Impacted Wisdom Teeth as a Cause of Epilepsy, by Dr. J. F. Roche of Palmer.

Oral Hygiene, by Dr. L. W. Miner of Boston.

Congenital Syphilis as the Causative Factor in Epilepsy, by Dr. H. C. Solomon of Boston and Dr. M. B. Hodskins of Monson State Hospital.

Epileptic Deterioration with Recovery.—A Case Report, by Dr. D. A. Thom, Monson State Hospital.

Alcohol and Its Relation to Epilepsy and Allied Convulsive Disorders, by Dr. D. A. Thom.

Note with Brain Photos on Internal Hydrocephalus in Epileptics, by Dr. D. A. Thom.

An Unusual Lesion of the Ependyma, by Dr. D. A. Thom.

Second Note from the Monson State Hospital, on the Frequency of Epilepsy on the Offspring of Epileptics, by Dr. D. A. Thom.

Nationality of Patients at Monson State Hospital, by Dr. H. T. Cleaves, Monson State Hospital.

Non-Protein Nitrogen Content of the Blood of Epileptics, by Dr. H. Caro, Monson State Hospital.

**CAMP SANITATION.**—Dr. E. W. Kelley of the Massachusetts State Health Department addressed the engineering corps of the Massachusetts Institute of Technology recently on the timely subject of "Camp Sanitation." While the plans for military preparedness may give especial interest to this subject at this time, it is one which always needs attention. Not only are there the camps of soldiers in regular work, as in Mexico at this very instant; the musters for a day or two in military evolutions; the preparedness camps at Plattsburgh and elsewhere, but also the business camps of contractor firms engaged in public or private construction or in lumbering operations. Then there are the groups of men and women who love the out-of-doors; there may be included the camps of the Boy Scouts; and, finally, there is the movement fostered by the United States Government to rent camping sites in large numbers in the White Mountain reservations to those who care

to apply for them. Each group is of a different order and to be treated in a somewhat different manner in point of minor technic, although the same fundamental principles underlie all the groups of camps. Dr. Kelley spoke of the two potential dangers from the sanitary point of view, the first to its occupants and the second to the outside world. He considers the first essential to any camp is water supply, and for the second in importance the conditions of food preparation, while the disposal of the wastes and fly protection is the third preventive principle. The neglect of any one of the three is fraught with a danger that may not be confined to the limits of the camp, and its personnel.

**MASSACHUSETTS BABIES' HOSPITAL CLOSES.**—Finding that the work for which it was incorporated has been adequately carried on by similar institutions, the Massachusetts Babies' Hospital has petitioned the legislature to permit it to transfer its funds to a kindred institution. The Boston Children's Aid Society has agreed to accept the trust, and the attorney-general has given his consent.

**MEDICAL WOMEN'S ASSOCIATION.**—The annual meeting of the Medical Women's Association for aiding medical work in foreign countries was held at Boston on April 11. There were addresses by Dr. Belle Allen of Baroda, India, on the medical situation in China, and by Dr. Mary Stone, a graduate student of Johns Hopkins University, under the Rockefeller Foundation on her hospital work at Kiu Kang, China.

**WINCHESTER VISITING NURSE ASSOCIATION.**—The annual meeting of the Winchester Visiting Nurse Association was held at Winchester, Mass., on April 11. Reports were presented from the several committees, including the committee on the Winchester Hospital.

The hospital building fund is now approximately \$50,000, besides the lot of land, which is free of debt. In addition there has been a bequest from the Slater estate of \$10,000 for a home for the nurses. Work was begun on the hospital building last week and it is expected that it will be ready for occupancy the first of the year. About \$15,000 remains to be raised by subscriptions to complete the fund necessary for the building.

Miss Mary L. Beard, director of the Instructive District Nursing Association of Boston, gave a talk on the work of that organization. Mrs. Coit, the first president of the Visiting Nurse Association. Miss Katherine Pond and Dr. Clarence J. Allen also spoke.

**DENTAL ALUMNI ASSOCIATION MEETING.**—The Boston and Tufts Dental Alumni Association held its annual dinner on April 12. The officers of the class of 1916 were invited as guests of honor. The following men were elected for office during the coming year: Dr. F. A. Sawyer,

president; Dr. P. H. Barton, vice-president; Dr. George H. Payne, treasurer; Dr. H. W. Perkins, secretary; and Dr. A. G. Richburg, editor, and the following executive board: Dr. P. H. Barton, chairman; Dr. E. W. Moore, Dr. T. H. Moran and Dr. A. G. Richburg.

**MASSACHUSETTS HOMEOPATHIC MEDICAL SOCIETY.**—The annual meeting of the Massachusetts Homeopathic Medical Society was held on April 13. Papers were read by Dr. Conrad Wesselhoeft, Dr. John P. Sutherland, Dr. J. Herbert Moore, Dr. Orville R. Chadwell and Dr. Horace Packard. At the dinner held in the evening, Dr. G. Forrest Martin of Lowell presided, and Dr. DeWitt G. Wilcox made an address on "The Psychology of Laughter." The following officers were elected for the coming year: Dr. J. Emmons Briggs, of Boston, president; Dr. DeWitt G. Wilcox, of Boston, and Dr. Elmer H. Copeland, of Northampton, vice-presidents; Dr. Edward S. Calderwood, of Roxbury, recording secretary; Dr. Benjamin T. Loring, of Boston, corresponding secretary; Dr. Thomas M. Strong, of Boston, treasurer; Dr. G. Forrest Martin, of Lowell, chairman of the censors.

**MASSACHUSETTS ANTI-TUBERCULOSIS LEAGUE.**—The Massachusetts Anti-Tuberculosis League will hold its second annual meeting and conference at the Twentieth Century Club, 3 Joy Street, Boston, on Thursday, April 27. The program is as follows:

"Introductory Remarks by the President," Vincent Y. Bowditch, M.D.

"The Plan of the State Department of Health for More Tuberculosis Hospitals," Eugene R. Kelley, M.D., Director, Division of Communicable Diseases, State Department of Health.

"The Relation of the Anti-Tuberculosis Society to the Local Board of Health," John W. Tapper, Chairman, Lynn Board of Health.

"The Visiting Tuberculosis Nurse," Mary Van Zile, R.N., Executive Secretary, Public Health Dispensary Commission, Beverly.

"Tuberculosis in Rural Communities," Vanderpoel Adriance, M.D., Williamstown.

"Some of the Problems of the Trustees of Massachusetts Hospitals for Consumptives," Arthur K. Stone, M.D., Chairman, Trustees of Hospitals for Consumptives.

"The Value of a Program of Work for Anti-Tuberculosis Societies," Mrs. William H. Lathrop, Newtonville.

The latter part of the morning session there will be a report from the Treasurer and Secretary, and election of officers and executive committee for the ensuing year. Before the afternoon session, there will be an opportunity to see an exhibit on "Open Air Schools" and on "Health in Industry." Each of these exhibits consists of about 75 photographs mounted on uniform cards. Mrs. Anna M. Staebler, Secretary, Committee on Health in Industry of the Boston Association for the Relief and Control of

Tuberculosis, will be in attendance part of the time, after the morning session, to explain the "Health in Industry" exhibit to those who are interested. The public is invited.

### Miscellany.

#### MASSACHUSETTS MILK LEGISLATION.

In another column of this issue of the JOURNAL is published an editorial comment on the present milk situation in Massachusetts, on the legislation which has been undertaken for its control and on the report of the Massachusetts Milk Board, upon which the McLaughlin milk bill now pending before the Massachusetts General Court, is based. The following is a reprint in part of the conclusions of that report and of the full text of the bill.

##### REPORT OF MASSACHUSETTS MILK BOARD.\*

"Massachusetts dairymen must produce milk of a superior quality if they are to hold the confidence and patronage of the consumers of the Commonwealth. As far as statistics are available, it would appear that Massachusetts dairymen produce more milk per cow than dairymen of neighboring states and countries, and produce it under generally better conditions as to cleanliness. Nevertheless, milk production in Massachusetts has rapidly decreased since 1890.

"To supply the steadily increasing population of the state with milk and cream, the large dealers of Boston and other cities have been going to points in other states (principally Maine, Vermont and New Hampshire) and the Province of Quebec to secure adequate supply. The great distance of some of these points, together with careless handling and slow transportation, tend to place a large amount of milk on the Massachusetts market which is less desirable than milk produced nearby.

"Sufficient milk to supply Massachusetts people could be produced within the borders of the state if the thousands of acres of naturally good dairy lands now lying idle were stocked with milch cattle. The principal reason for the decline in dairying in this state is the low price paid to producers. Other causes are the increase in the cost of cows, grain, building materials, labor and the improved methods demanded by state and municipal authorities, as well as constant legislative agitation for several years.

"Milk can be bought at lower prices at out-of-state points than Massachusetts farmers can produce it with profit. Milk transportation rates are lower in proportion for long haul than

for short haul. Massachusetts dairymen have been in general subjected to a more rigid enforcement of dairy rules and regulations than out-of-state producers of milk.

"Massachusetts dairymen furnishing milk for nearby consumption must compete with an inferior grade of milk produced out of state, which has been freed from disease germs by pasteurization, and has been rendered microscopically acceptable to the consumer by clarifying processes to remove filth originally introduced by slovenly dairy methods.

"Owing to the fact that in Massachusetts there are scarcely any country receiving milk stations, milk produced in Massachusetts must be marketed more quickly than milk produced out of state, which has been clarified and pasteurized before being shipped.

"It would be an advantageous practice if Massachusetts dairymen would label state-raised milk as 'Massachusetts milk,' particularly if a state authority could, after examination, permit its sale as a distinct grade of milk.

"In addition to epidemic diseases, the evidence is now conclusive that a very considerable proportion of tuberculosis in children is due to infection by the bovine type of tubercle bacilli taken into the body by drinking raw milk. Bovine tuberculosis is prevalent to a dangerous degree in ordinary dairy herds. Dairymen should attempt to eradicate tuberculosis from their herds, not only in the interest of public health, but also to improve the quality of their young stock. Adequate pasteurization as effectively destroys tubercle bacilli as it does the germs of epidemic diseases.

"Some part of our excessively high infant mortality rate is probably due to unwholesome qualities of the cow's milk furnished to infants. It is generally admitted, however, at present by children's specialists and sanitarians that the use of cow's milk, regardless of quality, furnishes only one among many factors in the total causes of infant mortality.

"There appears to be some grounds for concluding that in some cities of this Commonwealth the inadequacy of the total supply of cow's milk for infants and young children is a more serious public health problem than any existing deficiencies in quality.

"The present laws for the supervision of milk production and distribution in Massachusetts gives ample authority to the cities and towns to protect their milk supplies in as stringent and thorough a fashion as they may see fit. These laws make it mandatory upon cities and towns to carry out thorough dairy inspection in all dairies supplying milk for their consumption.

"The present system of sanitary supervision of milk by local authorities is in the aggregate costing the people of the Commonwealth fully as much, if not more, than a complete, well-balanced uniform system of control.

"As these laws are carried out, the practical

\*This report is summarized at greater length in the monthly bulletin of the Massachusetts State Department of Health for February, 1916.

results are that the inhabitants of many cities and towns receive no protection whatsoever and the inhabitants of many other cities and towns receive protection at the expense of the taxpayers in neighboring cities. Responsibility is divided, official friction between cities and towns is incurred. The literal carrying out of the laws would result in an inconceivable mass of overlapping inspections. The producer not having a fixed standard, owing to the changing and contradictory orders of local milk inspectors, is confused and discouraged.

"There is no law at present providing for state control of the milk supply of this Commonwealth relative to the public health. The systematic dairy inspections instituted in this state by the State Board of Health, and subsequently carried on by local authorities, have been productive of improved dairy conditions and an improved milk supply, many producers having taken advantage of the opportunities of obtaining valuable information from the inspectors.

"The clean milk contests of the State Board of Agriculture have been productive of much good among those producers who distribute milk of their own production direct to the consumer.

"Milk production should be so supervised as to result in a maximum of cleanliness and safety with a minimum of interference with the milk industry.

"At the present prices, or even at considerably higher prices than those prevailing at present, milk is one of the most economical of foods. There are no reasonable grounds for believing that the retail price of milk can be lowered.

"Milk should be bought and sold on its merits as determined by its chemical and bacteriological condition, rather than by volume only. This should include higher price for higher fat content and higher price for low bacterial content.

"Pasteurization or sterilization is the only practical method for insuring the safety of commercial milk. No epidemic has ever been traced with certainty to pasteurized milk. The present uncontrolled method of pasteurization does not furnish a satisfactory safeguard to the public. To make certain of the adequacy of the processes of sterilization or pasteurization, the responsibility therefor should rest upon public health officials. Employees in commercial pasteurizing plants should be subjected to routine physical examination. Pasteurization should not be allowed to be used to conceal an inferior quality of milk.

"Fresh milk has a greater food value than other milk. Milk, while in the possession of the consumer, should be no less scrupulously cared for than while in the hand of the producer or dealer. It should be immediately placed in a cool place and kept there, duly protected until used.

"All milk bottles received by the consumer should be washed with soap and hot water as soon as the milk has been removed, and should be kept clean until returned to the dealer. Milk bottles should never be used for anything but milk, as is provided for by statute."

#### TEXT OF THE McLAUGHLIN MILK BILL.

##### AN ACT RELATIVE TO THE INSPECTION OF MILK.

SECTION 1. The State Department of Health, after public hearings, is hereby authorized to frame reasonable rules and regulations relative to the sanitary conditions of the production, transportation, care, handling, storage and distribution of milk, which rules and regulations shall take effect after the approval of the Governor and Council.

SECT. 2. The State Department of Health may by its rules and regulations establish grades of milk based upon the butter fat content, sanitary conditions of dairies, and the bacterial content of milk before and after pasteurization, and shall fix methods of pasteurization. After the establishment of such grades, all milk sold or offered for sale within the Commonwealth, if graded, shall be graded according to the standards established by the State Department of Health rules and regulations. The board of health of any city or town may require all milk offered for sale within their jurisdiction to be so graded whenever the interests of the public health shall in their judgment render it necessary and advisable to do so.

SECT. 3. No license under the provisions of Chapter 443 of the Acts of 1909, and no permit under the provisions of Chapter 744 of the acts of 1914, shall be issued to any person, firm or corporation who has not complied with the rules and regulations established under the provisions of Section 1.

SECT. 4. Boards of health of cities and towns may require pasteurization, in accordance with the methods as established under Section 2 of any or all milk offered for sale or processed within their jurisdiction, whenever the interests of the public health shall render it necessary or desirable to do so, but no re-pasteurized milk shall be sold or offered for sale within the Commonwealth.

SECT. 5. Whoever, himself, or by his servant or agent, or the servant or agent of another person, violates any of the rules or regulations established under the provisions of this act or violates any of the provisions of this act shall be punished by a fine of not more than \$100.

SECT. 6. Boards of health of cities and towns shall enforce the provisions of this act and all rules and regulations established hereunder. If the board of health of any city or town shall neglect or refuse to enforce the provisions of this act, or the rules and regulations established hereunder, the State Department of Health shall have the power to enforce all such provisions, rules and regulations, and the cost of the

same shall be paid into the treasury of the Commonwealth by such city or town.

Sec. 7. If, after thirty days' notice in writing by the State Department of Health, the board of health of any city or town refuses or neglects to enforce the provisions of this act and the rules and regulations established hereunder, said city or town shall be subject to a penalty of not less than \$10 per day for each day's failure so to comply. Said penalty to be enforced by appropriate action brought in the name of the Commonwealth by the attorney-general on complaint of the State Department of Health; provided, that if the board of health or the board of selectmen acting as a board of health of any town shall, by resolution filed with the State Department of Health, not less than ninety days prior to the first day of June of any year, request the State Department of Health to take over and exercise the powers and perform the duties conferred or imposed upon local boards of health by the provisions of Chapter 744 of the Acts of 1914, or by the provisions of this act or by the rules and regulations established hereunder, the State Department of Health shall take over and exercise such powers and perform such duties for such year, and such towns shall not be liable to the penalty imposed by this section.

Sec. 8. The sum of \$10,000 is hereby appropriated to the State Department of Health for the enforcement of the provisions of this act.

Sec. 9. This act shall take effect on June 1, 1916.

#### WORKMEN'S COMPENSATION ACT. DECISION OF THE SUPREME JUDICIAL COURT OF MASSACHUSETTS, IN THE PECOTT CASE, APRIL 12, 1916.

CARROLL J. The employee, was injured Saturday, October 31, 1914, between half past eleven and twelve o'clock. As usual on Saturday, the mill closed at noon. In the afternoon, the pain from the injury became intense and he consulted Dr. Cregg, who advised an operation. Monday the employee made an attempt to notify his foreman of the injury, and failing in this, he left word by telephone with one of the office employees. Wednesday, November 4, 1914, he was operated on for hernia.

At the time the plaintiff was injured there were posted in the mill where he worked, printed notices informing employees that, in case of injury, Dr. Carl R. Moeckel or Dr. Howard L. Cushman was to be called, "bills of other physicians will not be paid by the insurance company." No attempt was made to notify these physicians of the injury, the employee making no effort to secure their services. Dr. Cregg performed the operation. It is agreed that his charge is reasonable, and the question is whether under these circumstances, the company is required by the Workmen's Compensation Act to

pay for the services of a physician not furnished by it, but selected by the employee.

Under the Workmen's Compensation Act, the reasonable medical services required during the first two weeks after the injury, are to be furnished by the insurer; the duty of supplying medical aid being imposed upon the insurance company, with the obligation of paying therefor. The right to select the attending physician is given to it by the statute. It is evident, we think, that the Legislature in passing this act, did not intend to give to the employee the privilege or right of selecting his own physician at the expense of the insurer. Under the amendment of 1914, where a physician other than the one provided is called in case of an emergency, or for other justifiable cause, the insurer is required to pay for this service, if in the opinion of the Industrial Accident Board the charge is reasonable and the cause of employment justifiable. The purpose of the Legislature in passing this amendment was not to deprive the insurer of the right to select its own physicians. By this change in the law, provision was made for the case of emergency, where there was imminent danger, where the suffering and pain were severe, where immediate attention was required, and the services of the insurance physician could not be obtained in time to give adequate relief. The amendment was also intended to apply to a situation where there was no actual emergency, but where the employee, acting as a reasonable man, would be justified in refusing the care of the physician selected by the company. There is nothing in the record of this case to show such an emergency, or any cause which would justify a reasonable man in neglecting to seek the attention of the physicians named.

Even if on Saturday afternoon, when the pain was intense, an emergency then existed which made it prudent to call Dr. Cregg, and he could respond more quickly than the physician of the company, and the employee was justified in sending for him (which we are not called upon to decide), there is nothing in the evidence which discloses any such emergency existing on the Wednesday following, when the services were rendered, and nothing is shown which would justify the employee in failing to secure the services of the physicians offered by the insurer.

In Panasuk's case, 217 Mass., 589, it was held, that the employee, an "illiterate foreigner, unable to read, write or understand the English language," was not bound by a notice printed in English.

In the case at bar the plaintiff could read and speak English; notices were conspicuously posted, we think he was charged with knowledge of them and their contents, and there is no evidence which justified him under the statute in neglecting to secure the services of either of the physicians named. Daniels v. New England Cotton Yarn Co., 188 Mass., 260. His igno-

rance of his rights under the Workmen's Compensation Act, cannot excuse him from compliance with its terms. *McLean's Case, ante.*

Decree reversed.

#### APPOINTMENTS.

DR. HORACE K. BOWELL has been appointed dispensary physician of Brookline, Mass., to succeed Dr. Charles H. Lawrence.

DR. FRANCIS P. DENNY, agent of the Brookline Board of Health, DR. AUGUSTA G. WILLIAMS and DR. ARTHUR A. CUSHING have been appointed members of the Brookline Dental Dispensary.

#### NOTICES.

THE TENTH "AUTHORS' EVENING" of ten papers on "Developmental Psychology," "The Formal Launching of a New Psychological View-point" by Walter B. Swift, A.B., S.B., M.D., in charge Voice Clinic; and Caroline A. Osborne, M.D., Ph.D., First Assistant, at the Voice Clinic, Psychopathic Hospital, 74 Fenwood Road, Brookline, Mass., will be held April 28, 1916, at 8 P.M.

- Cases at 7.30.  
Introduction: Outline of the First Note.
1. Developmental Psychology—General Principles.
  2. Developmental Psychology not Educational nor Genetic.
  3. Developmental Psychology in Childhood.
  4. Developmental Psychology of the Normal Adult.
  5. Developmental Psychology of a Student Type.
  6. Developmental Psychology in the Age Periods.
  7. Developmental Psychology for Personality Expansion.
  8. Developmental Psychology of Stuttering.
  9. Developmental Psychology in the Feeble-Minded.
  10. Developmental Psychology among the Psychoneuroses.
- Discussion by Drs. Harold E. Burt, F. Lyman Wells, Robert M. Yerkes.  
Short Review of the Year's 100 Papers. Prophecy.

#### SOCIETY NOTICES.

##### SUFFOLK DISTRICT MEDICAL SOCIETY.

##### CENSORS' EXAMINATION.

The censors of the Suffolk District Medical Society will meet to examine candidates for admission to the Massachusetts Medical Society at the Boston Medical Library, 8 Fenway, on Thursday, May 11, 1916, at 4 P.M. Candidates, who must be residents of the Suffolk District, or non-residents of Massachusetts, should make personal application to the Secretary, presenting their medical diplomas at least three days before the examination. For further particulars, apply from 4 to 5 P.M. to DAVID CHEEVER, M.D., Secretary, 355 Marlborough St., Boston, Mass.

THE AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION. The nineteenth annual meeting of the American Gastro-Enterological Association will be held at Washington, D. C., Monday and Tuesday, May 8 and 9, 1916. The headquarters and all the sessions will be at the New Willard Hotel.

The medical profession is cordially invited to attend.

FRANKLIN M. WHITE, M.D., Secretary.

THE HARVEY SOCIETY.—The eleventh lecture of the series will be held at the New York Academy of Medicine, 17 West 43d Street, on Saturday evening, April 29, 1916, at 8.30 P.M., by Prof. William H. Welch, Johns Hopkins University. Subject: "Medical Education in the United States."

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS.—There will be a meeting of the Massachusetts Society of Examining Physicians at the Copley Plaza, Boston, on May 3, 1916, at 8 P.M.

#### PROGRAM.

1. "Mental States Responsible for Malingering." Dr. Ernest B. Emerson, Medical Director, State Hospital for the Criminal Insane.
  2. "Psychopathic Personality as a Factor in Physical Diagnosis." Dr. Elmer E. Southard, Psychopathic Hospital, Boston.
  3. "A Factor Often Overlooked in the Consultation Room." Dr. F. W. Anthony, Haverhill, Mass.
  4. "Conditions Other Than Physical That Affect the Return of the Injured to Employment." Mr. Clark E. Woodward, Assistant Secretary, Massachusetts Employees' Insurance Association.
- Discussion open by Dr. J. W. Courtney, Dr. H. B. Eaton, and Norman S. Hesselstine, Esq.  
Dinner at 6.30 P.M.

JAMES H. STEVENS, M.D., Secretary.

#### RECENT DEATHS.

DR. SETH VALE GOLDSCHWARTZ, a retired Fellow of the Massachusetts Medical Society, died at his home Alston, April 9, aged 67 years. He was a graduate of the Boston University School of Medicine in 1880, and formerly practiced gynecology in Boston. He is survived by his widow.

DR. SIR ALEXANDER RUSSELL SIMPSON, who died on April 6, at Edinburgh, Scotland, was born in 1838. He was emeritus professor of obstetrics to the University of Edinburgh and was formerly dean of the faculty of medicine in that city. He was the author of many widely-known medical works.

DR. THEODORE B. SACHS, who died on April 2 at Naperville, Illinois, was director of the Chicago Municipal Tuberculosis Sanatorium and president of the National Tuberculosis Association. He received the degree of M.D. in 1895 from the University of Illinois, and had been prominent as a practitioner and worker in the field of tuberculosis prevention. He was also president of the Chicago Tuberculosis Institute, a member of the Illinois State and Chicago Medical Societies and of the American Medical Association.

DR. SIMEON HUNT, who died on April 5 at East Providence, R. I., was born at Seekonk, R. I., on April 27, 1837, of Quaker parentage. He received the degree of A.B. from Dartmouth College in 1862 and that of A.M. in 1867. He first studied medicine as an apprentice in a physician's office at Haverhill, N. H., and obtained the degree of M.D. from Dartmouth in 1864. He immediately settled at East Providence where he continued active in the practice of his profession for over fifty years. He is survived by two sons, one of whom is also a physician.

DR. NATHAN OPPENHEIM, who died on April 5 in New York City, was born at Albany, N. Y., in 1808. He received the degree of A.B. from Harvard College in 1838 and that of M.D. in 1861 from the College of Physicians and Surgeons of Columbia University, New York. He early specialized in pediatrics and was attending physician at the New York City Children's Hospital, and at the Children's Department of the New York Red Cross Hospital. He was a member of many national, state and county medical societies, of local medical clubs and of the New York Academy of Medicine, and was author of several medical works on pediatrics.

DR. ALLAN M. CLEGGHORN, formerly an assistant in physiology at the Harvard Medical School, subsequently naturalist for the Algonquin Park, Ontario, and recently serving at a Captain in the British Royal Army Medical Corps, has died in England. He was born in 1872.

DR. JOHN FRANCIS MOORE, a Fellow of the Massachusetts Medical Society, died at Worcester, April 15, 1916, aged 35 years. He was a graduate of the Baltimore Medical College in 1907.